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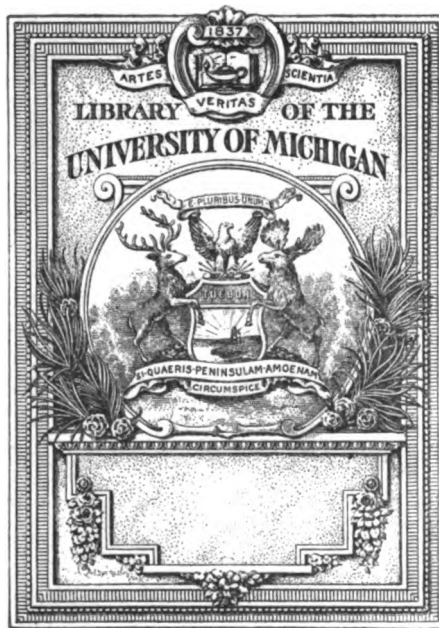
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TWENTY-SIXTH ANNUAL REPORT

OF THE

Ohio State Board of Agriculture,

WITH AN

ABSTRACT OF THE PROCEEDINGS

OF THE

COUNTY AGRICULTURAL SOCIETIES:

TO THE

GENERAL ASSEMBLY OF OHIO,

FOR THE YEAR 1871:

COLUMBUS:
NEVINS & MYERS, STATE PRINTERS.
1872.

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FOR 1871.

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Steamer—Anderson's agricultural	167
Stove—the celebrated fashion	174
Steam heating apparatus	175

W.

Water wheel—Eclipse double turbine	140
Walking cultivator—advance	146
Water drawer—torrent	168
Wagon—McElroy	176

By some unaccountable cause, the following list was omitted from its proper place with the entries and awards:

AWARDS ON POULTRY.

H. Bishop, Springfield, best pair of Cochinchina fowls	\$5
Col. James Leffell, Springfield, 2d best	3
W. H. Todd, Vermillion, best pair of light Brahma fowls	5
W. H. Todd, Vermillion, 2d best	3
W. H. Todd, Vermillion, best pair dark Brahma fowls	5
W. H. Todd, Vermillion, 2d best	3
Best pair Shanghai-Brahma fowls	No award.
2d best pair Shanghai-Brahma fowls	No award.
W. H. Todd, Vermillion, best pair Game fowls	5
H. Bishop, Springfield, 2d best	3
Col. Jas. Leffell, Springfield, best pair Dorkins	5
2d best pair Dorkins	No award.
D. Clayton, Osborn, best pair Polands	5
Col. Jas. Leffell, Springfield, 2d best	3
H. Bishop, Springfield, best pair Spanish	5
S. E. Merry, Milan, 2d best	3
W. H. Todd, Vermillion, best pair Hamburg fowls	5
Col. Jas. Leffell, Springfield, 2d best	3
H. Bishop, Springfield, best pair Bolton greys	5
W. H. Todd, Vermillion, 2d best	3
H. Bishop, Springfield, best pair of Domeniques	5
Peter Sigler, Springfield, 2d best	3
W. H. Todd, Vermillion, best pair Bantams	2
H. Bishop, Springfield, 2d best	1
S. E. Merry, Milan, best pair Pheasants	5
H. Bishop, Springfield, 2d best	3
Col. J. Leffell, Springfield, best pair Houdans	5
W. H. Todd, 2d best	3
Col. J. Leffell, Springfield, best pair La Fleche	5
2d best	No award.
Col. J. Leffell, Springfield, best pair Crevecœur	5
W. H. Todd, Vermillion, 2d best	3
“ “ best pair Capons	3
S. E. Merry, Milan, 2d best	2
M. T. Scarff, New Carlisle, best pair Peafowls	5
2d best	No award.
W. H. Todd, Vermillion, best pair Cuyuga black ducks	5
W. H. Todd, Vermillion, 2d best	3
“ “ best pair white Aylesbury	5
H. Bishop, Springfield, 2d best	3
W. H. Todd, Vermillion, best pair Rouen	5
S. E. Merry, Milan, 2d best	3
“ “ best pair common ducks	5
H. Bishop, Springfield, 2d best	3
David Clayton, Osborn, best pair turkeys	5
M. T. Scarff, New Carlisle, 2d best	3
S. E. Merry, Milan, best pair geese	5
H. Bishop, Springfield, 2d best	3
W. H. Todd, Vermillion, best pair Bremen geese	5
Wylie Jenkins, Dialton, 2d best	3
Col. James Leffell, Springfield, best pair Chinese geese	5
H. Bishop, Springfield, 2d best	3
W. H. Todd, Vermillion, best pair Toulouse geese	5
“ “ 2d best	3
H. Bishop, Springfield, best pair Poland geese	5
“ “ 2d best	3
M. T. Scarff, New Carlisle, best pair wild geese	5
2d best	No award.
Best and largest exhibition of pigeons, six varieties	No award.
H. Bishop, Springfield, best and largest exhibition of poultry one exhibitor	20

STATE FAIRS IN OHIO.

Fair at Cincinnati, 1850, receipts.....	\$8,036 18
“ Columbus, 1851, “	8,204 09
“ Cleveland, 1852, “	13,360 00
“ Dayton, 1853, “	13,996 37
“ Newark, 1854, “	8,824 58
“ Columbus, 1855, “	9,745 54
“ Cleveland, 1856, “	16,648 20
“ Cincinnati, 1857, “	17,530 75
“ Sandusky, 1858, “	9,997 70
“ Zanesville, 1859, “	8,958 82
“ Dayton, 1860, “	11,998 50
“ Dayton, 1861, “	8,036 18
“ Cleveland, 1862, “	11,260 64
“ Cleveland, 1863, “	11,142 00
“ Columbus, 1864, “	12,620 54
“ Columbus, 1865, “	10,658 65
“ Dayton, 1866, “	14,035 80
“ Dayton, 1867, “	18,692 98
“ Toledo, 1868, “	15,606 25
“ Toledo, 1869, “	19,606 50
“ Springfield, 1870, “	18,252 85
“ Springfield, 1871, “	16,460 25
“ Mansfield, 1872, “	19,149 45

PROCEEDINGS OF THE BOARD.

STATE AGRICULTURAL ROOMS,
Columbus, O., January 5th, 1871.

New Board met in the State Agricultural Rooms.

Present: Wm. Lang, of Tiffin; Wm. B. McClung, of Troy; J. B. Jamison, of Cadiz; L. G. Delano, of Chillicothe; R. P. Cannon, of Aurora. Members whose term expires in 1872.

Jas. Buckingham, of Zanesville; D. C. Richmond, of Sandusky; S. Harmount, of Canal Dover; L. B. Sprague, of Springfield; Jno. A. Warder, of Cincinnati. Members elected Jan. 4th, 1871.

On motion, Wm. B. McClung was nominated Chairman for the purpose of organizing the Board.

WM. LANG, of Tiffin, was elected President for 1 year.

JAS. BUCKINGHAM, of Zanesville, was elected Treasurer for 1 year.

H. S. BABBITT, of Columbus, was elected Recording Secretary for 1 year.

JNO. H. KLIPPART, of Columbus, was elected Corresponding Secretary for 1 year.

Ordered, That the next State Fair take place during the week commencing September 25th, 1871.

Ordered, That when the Board adjourns, that it adjourns to meet at 8 o'clock A. M. Tuesday, Feb. 14, 1871.

Mr. Cannon offered the following, which was adopted:

Resolved, That a memorial be presented to the General Assembly, praying for a change in the laws to require returns to be made to the office of the State Board of all statistics relating to agriculture, crops and live stock, in same manner as returned to the Secretary of State.

At a meeting of the Board—9 o'clock A. M.—the following resolution was unanimously adopted:

Resolved, That the understanding of the Executive Committee in the matter of leasing the ice-cream, candy and pop-corn stands to Baker, is, that the said agreement was only for the year 1870; and that the Executive Committee for 1871 is hereby authorized to lease the said stands, the coming year, to the highest bidder.

The Executive Committee requested Mr. Baker to produce the contract which he claimed entitled him to the exclusive privilege of the ice-cream, candy and pop-corn stands. Mr. Baker presented a contract in the handwriting of Mr. Ross, which very clearly gave Mr. Baker the right he claimed for the years 1870 and 1871, from the fact that these dates were named in the contract.

FEBRUARY 14th, 1871.

Members all present.

Mr. Cannon stated that he had submitted a report to the Chairman of the Finance Committee of the House of Representatives, relative to the application for the usual \$3,000 appropriation, omitting any and all arrearages.

Mr. Cannon offered the following resolution, which was adopted :

Resolved, That we proceed to the consideration of the premium list, with a view to further discriminate, but not greatly reduce in the aggregate.

On motion of Dr. Warder, it was ordered, that no person will be allowed to exhibit articles which have been procured for that express purpose.

On motion of Mr. McClung, it was ordered, that persons competing for field crops, shall make their entries on or before the first day of June preceding the annual fair.

On motion of Dr. Warder, it was ordered, that a premium of \$100 be offered for the best accepted essay, on the best practical means of preserving the forests of Ohio.

Ordered, That a diploma be offered for any worthy improvement in each class of the reapers, mowers, or combined machines, made since the field trial at Mansfield.

Ordered, That a premium of \$5 be awarded for the best hand-power machine to operate churn.

Resolved, That the machinery, engines and farm implements, so far as practicable (except mowers and reapers), entered for premiums, shall be tested by practical working, under the direction of the Member of the Board in charge, and committees to be appointed by the Board, and paid the sum of dollars per day for the labor performed previous to the opening of the Fair, which test shall commence on previous to the Fair, the Society furnishing stationary steam-power, the exhibitors other power necessary. The test to include all machines and implements (as above named) in books 27, 28, 29, 30, 33 of old list. The above test to be made under the supervision of the Executive Committee, they having the power to reduce or increase the number of tests made.

The premium list was revised, and eight thousand copies ordered to be printed.

The Secretary submitted a letter from Messrs. Strobbridge & Co., proposing to print the admission tickets from lithographic plates—printing 100 tickets on a sheet.

On motion of Mr. Buckingham, it was

Resolved, That the old plates on hand for tickets be sent to Cincinnati and sold for old type metal, and that eighty thousand tickets be lithographed in Cincinnati, in sheets of 100 each, and that they be sent to the Treasurer at Zanesville, to be cut and counted, and he be responsible for the same. Paper twice as thick as last year.

The Secretary was authorized to contract with Messrs. Strobbridge & Co. for 5,000 lithographic posters, from the same plate as those of 1870; 3,000 of the posters to be printed in one color, blue, and 2,000 in two colors, red and blue.

The President appointed the following members in charge of the Departments:

- L. G. Delano, in charge of Horse Département.
- L. B. Sprague—Cattle.
- Jas. B. Jamison—Sheep, Swine and Poultry.
- Wm. B. McClung—Machinery and Implements.
- R. P. Cannon—Mechanics and Manufactures.
- S. Harmount—Textile Fabrics.
- Jno. A. Warder—Flowers and Fine Arts.
- D. C. Richmond—Fruits and Farm Products.

The President appointed the following Executive Committee:

- D. C. Richmond, L. B. Sprague, L. G. Delano, and Wm. B. McClung.

MURRAY HOUSE, SPRINGFIELD, O.

Executive Committee all present.

The Secretary submitted bids for printing and binding premium lists as follows:

Columbus Printing Co.....	8,000 copies, 2,000 covered.....	\$223 to	\$268 00
Republic (Springfield)	8,000 " " "		290 00
State Journal.....	8,000 " " "		227 00
Nevins & Myers	8,000 " " "		248 00
Strobbridge & Co., Cincinnati, 10,000	" " "		275 00

Each of the parties bidding submitted samples of paper; and upon a thorough examination, with the services of Mr. Hastings as an expert to

judge of quality of paper, it was decided that the bid of the Columbus Printing Company was the most advantageous for the Board.

It was agreed that Ed. Freeman, of Toledo, be employed to superintend and prepare the grounds, halls, etc., for the ensuing Fair. Mr. Richmond was authorized to contract for such lumber as might be necessary to make the appointments of the grounds complete.

It was agreed to erect a new amphitheatre at the horse ring.

SPRINGFIELD, O., August, 1871.

Present—Wm. Lang, President; Jas. Buckingham, Treasurer; D. C. Richmond, L. B. Sprague, Wm. B. McClung, and L. G. Delano.

Proceeded to Fair-grounds, to sell lunch stands; sold as follows:

WARM MEAL STANDS.

1. C. F. Milburn, Xenia.....	\$65 00
2. Hicks & McCann, Xenia	50 00
3. W. M. Milburn, "	65 00
4. Mrs. A. E. Davis, Columbus	46 00
6. H. Gram, Yellow Springs.....	55 00
7. Finch (for Methodist Church), Springfield	125 00
8. J. S. Kyle (for Baptist Church), Springfield	240 00
9. C. F. Kingore, Donaldsville.....	85 00
10. D. H. Wolfensberger, Osborn.....	62 00

COLD LUNCH STANDS.

1. F. White, Delaware.....	\$100 00
2. J. H. W. Mumma, Dayton.....	90 00
3. Jno. C. Hax, Springfield.....	59 00
4. Wm. Martin, Dayton.....	100 00
5. Geo. Mitch & Co., Springfield.....	150 00
6. Jno. A. Leidschuh, "	50 00
7. Jno. Huonker, "	28 00
8. Jacob Grube, "	65 00
9. Wm. L. O'Brien "	138 00
10. Wm. Martin, Dayton.....	44 00
11. Diltz & Jones, Xenia	80 00
12. Jas. H. Youngs, Brant	50 00
13. W. Hoffman, Springfield	45 00
14. E. T. Dudley, "	11 00
15. Mrs. Rafferty, "	10 00
16. W. Huffman, "	21 00

The moneys collected were at once paid over to the Treasurer.

A representative of the firm of Brownell & Killmeyer, of Dayton, was present, and agreed with Wm. B. McClung to furnish and put up an engine sufficient to furnish the motive power for Power Hall during the week previous, and the week of the State Fair, for the sum of one hundred and eighty dollars.

It was ordered, that the Secretary procure a wood engraving view of the State Fair-grounds, from the design submitted by Mr. Uhl, artist; and contract, at reasonable rates, to get 10,000 "programme" posters, printed in blue; and to send 500 copies to each member of the Board, with a request to have them distributed immediately, and that the Secretary have the remainder distributed over such roads as are not in the vicinity of members of the Board.

The contract made was for engraving.....	\$75 00
" " " " printing	99 00
	<hr/> 174 00

COLUMBUS, August 14, 1871.

I agree to print 10,000 posters in blue ink, with 12x14 at head; the size of the bill to be 13x36 inches, in fair workmanlike manner, on good paper, for the use of the State Board, for the sum of ninety-nine dollars (\$99).

COLUMBUS PRINTING COMPANY,
by John M. Webb.

Secretary was authorized to draw \$500 to be distributed to the country press of Ohio for local notices of the State Fair.

SEPTEMBER 25th.

Voted to give no dinner tickets to Superintendents.

Voted that no cider be retailed by those who manufacture it on the grounds.

Voted that nothing be admitted on the grounds for exhibition for money and for sale, which is not promotive of Agriculture or the Mechanic Arts.

Voted that no passes be granted to grooms and other similar employes.

Voted that Mr. Buckingham be intrusted with the dispensation of passes to the refreshment stands.

Voted that the Moline Plow and Cultivator be accepted and donated to the State Agricultural College.

Voted to adopt Harmount's resolution on trial of implements.

FRIDAY EVENING, September 29th.

Voted to sustain the award of committee on Stocking Yarn.

Voted that the lumber be taken down and piled into Domestic Hall, and insured for such sum as the Executive Committee deem proper.

Voted that the Executive Committee settle about the fence with the Clark Co. Society.

Voted that a Diploma be awarded to the Babcock Fire Extinguisher.

Voted to meet on Thursday after the annual election, in the morning.

Resolved, That the thanks of the Ohio State Board of Agriculture is due and hereby tendered to the citizens of Springfield for the courtesies and kindnesses extended to the Board in their intercourse with them, and the pleasant entertainments they have received at the hands of Col. Sintz, and the officers and members of the Clark Co. Agricultural Society, Mr. Geo. Spence, Gen. J. Warren Kiefer and others, and that the Secretary be instructed to furnish a copy of this resolution to the press of Springfield.

MURRAY HOUSE,
Springfield, Oct. 12th, 1871.

It is agreed between the State Board and the Clark Co. Society that the lumber in the sheep pens and the lumber in that part of the south fence yet standing, estimated at 22,000 feet, be left and is taken by the Clark Co. Society in lieu of the old fence taken away by the State Board; that in lieu of the stalls taken away by the State Board and for the labor of replacing the south fence, the Clark Co. Society takes the balance of all the amphitheatres, together with the reporters' stand in the horse ring.

Present—President Lang, McClung, Richmond, Sprague, Klippart, Ed. Freeman.

Clark Co. Board—Col. Sintz, Yeazell and 3 others.

SPRINGFIELD, Oct. 12th.

Present—President Lang, McClung, Richmond and Sprague.

Voted to refund J. M. Trimble and N. S. Townshend the moneys they paid for expenses at the State Fair.

Voted to pay Col. Sintz twenty dollars, and Mr. Garlaugh fifteen dollars, for their services antecedent and during the State Fair.

Voted that the adjustment of the claim of Sintz Sons be referred to the Board at the January meeting.

Voted that the sum of one thousand dollars be sent to L. B. Sprague to close up the accounts, as near as may be, at Springfield.

Upon receipt of Sintz's letter, W. B. McClung requested D. C. Richmond to say to Sintz that he would have Freeman put up a hall that

would meet his wants. This order was given and carried out. The building was up six days before the Fair, Sintz making no complaint. Thus matters rested until the Fair commenced; after which Sintz said, owing to an accident happening by the falling of shaft, they would not be able to give us the power intended to be given when they first proposed to give us that power. W. B. McClung, also, gave D. C. Richmond instruction to make arrangement for shafting. Sintz agreed to furnish, of his own shafting, 16 feet, after which he was to procure additional shafting of 16 feet, in all 32 feet; for which the Board were to pay a reasonable compensation. After the Fair began, Sintz informed the Board that owing to the lending of a shaft they could not furnish the power contemplated, consequently the Board received no compensation for the amount expended for hall (building of hall, one hundred dollars).

STATE AGRICULTURAL ROOMS,
COLUMBUS, O., January 2, 1872.

Present—Messrs. Jamison, McClung, Delano, Cannon, Richmond, Har-
mount, Buckingham and Sprague.

Absent—President Lang and Warder.

On motion, the commended list was taken up and the following awards made:

1. Halburt & Page, Painesville, Portable Engine and Road Steamer—Diploma.
2. Ohio Pump Company, Toledo, Pump Boring Machine—Diploma.
3. Columbus Mantle and Grate Company, Columbus, display of Marbleized Wood—Diploma.

Ordered, to put on the Premium List for 1872, the following: 2d premium on mare, 2 years old and over, in Roadster Class. Improvement for Raising and Lowering Platforms, and Chimney or Stove Pipe, Thimble or Ventilator.

The following protests were acted upon:

CADIZ, OHIO, October 3, 1871.

Ohio State Board of Agriculture:

We do protest against payment of first premium on rams over two years old, in Entry Book 16. The reason, said sheep not being fairly shown.

Yours truly,

S. T. CAMPBELL,
W. A. HERRIOTT.

The Board sustained the action of the Committee.

SPRINGFIELD, OHIO, September 28, 1871.

To the Board of Directors of the Ohio State Fair :

GENTS—I would respectfully call your attention to a report of the Committee in 2d Class, Book No. 31, in regard to stump puller entered by Edwin Bayliss, of Massillon, O. They report that they examined the machine, and found it too weak. I claim that they did not examine the puller enough to judge rightly of the power that it has. We hooked the machine to the largest stump that could be found, and pulled off a large root, and then hooked a chain around the body of the stump, and tried to pull it up by a direct pull, which is not a correct way to pull any stump; the correct way being, to always hitch to the largest root, and use it as a pry to turn the stump over. In hitching this way, we broke our chain, which does not properly belong to the machine, but was used as a matter of convenience. The Committee then went to dinner and promised to return, which they did not do. We waited until two o'clock, and then hitched to another root, and pulled the stump with ease. The puller is not a new invention, but has been manufactured in the Eastern States in very large numbers for several years, and has probably taken more first premiums than any other machine ever invented, having never been beaten or equaled by any other hand power stump puller. At Cleveland, two weeks ago, it got the first premium over a horse-power puller.

Hoping you will examine this matter, and feeling sure you will do the machine justice, I remain,

Very respectfully,

E. B. BAYLISS.

The Board sustained the action of the Committee.

To the Ohio State Board of Agriculture :

The undersigned exhibitors at the 22d Annual Fair, in 3d Department, respectfully protest against an award of the Committee in charge of Entry Book No. 36, viz. :

Hon. Perry Stewart, J. P. Sears and two ladies.

First—For the reason that they have been awarded a premium in Entry No. 110, an article manifestly impracticable and worthless for agricultural purposes, in the class of articles for which such premium was offered.

Second—Because the Chairman of the Committee, Hon. Perry Stewart, did not pretend to have taken into account the utility or expense of the article in making the award, but in reply to the inquiry, if practicability or expense was considered, said, "There was two women on the Committee who took a fancy to that lattice work, so we gave it the premium."

Third—We protest against this action of the Committee, because such decisions defeat the object and intention of the competition upon their relative merits, contemplated by the State Board, when inviting an exhibition of articles at the State Fair.

Fourth—Because the reason given for the award and the action in accordance with it, demonstrates the utter incompetency of these person to serve on any Committee, or determine the relative merits of any article.

Fifth—Because the entry was for a portable fence, and the Committee placed the premium card, and evidently awarded their premium upon a stationary fence.

Sixth—That when on the suggestion of Hon. R. P. Cannon, in charge of the 3d Department, the Committee reviewed their decision, the Hon. Mr. Stewart says, "they took another woman with them," carefully considered the matter, and confirmed their previous decision.

It is proper to say, that Hon. Mr. Stewart, upon his own motion, without consultation or advice of the Superintendent, added the last named lady to the Committee, to aid them in confirming their previous decision.

Also, in justice to Mr. Cannon, we wish to say that we have no supposition that he is in any way responsible for any action of the Committee of which we complain, he having discharged all duties incumbent upon him, with that urbanity and impartiality that makes all association with him a pleasant one.

While we regret the necessity of troubling you with this protest, we feel assured the Board would not have us do less than we have done, when such glaring evidences of stupidity, incompetency or reprehensible carelessness, prove that some examinations are an objectional farce, and the award of some premiums no evidence of discrimination or merit.

C. S. S. Griffing, representing entry No. 46, Book 36; S. B. Herron, representing entry No. 101, Book 36; Wm. Mallary, representing entry No. 56, Book 36.

Springfield, Ohio, Sept. 29, 1871.

The Board sustained the action of the Committee.

SPRINGFIELD, O., Sept. 29, 1871.

To the Board of Agriculture of the Ohio State Fair Association :

We herewith respectfully enter our protest to the decision of the committee on marble work of Ohio artists, on the following grounds :

First, the premium is offered on the best collection of marble by Ohio artists. We claim that the collection offered by us is of our own manufacture, manufactured in Springfield, Ohio, while that of our competitor is Scotch granite, manufactured and completed in Scotland, and of course, is not the production of Ohio artists.

Respectfully submitted,

KELLEY, MAXON & FORBES,
Springfield, O.

Action of committee set aside, protest sustained.

STATE FAIR GROUNDS,
SPRINGFIELD, O., Sept. 29, 1871.

We, the undersigned, woolen manufacturers and exhibitors at the Ohio State Fair, for 1871, do hereby enter our protest against the premiums as awarded by the Committee on Textile Fabrics, for the best twenty-five pounds assorted stocking yarn. We are unanimously of the opinion that the first premium should be awarded to Messrs. Rabbits, Steele & Co., and the second premium, to the Tiffin Woolen Mills. This, we believe, to be but justice to the parties interested.

Respectfully submitted,

Thomas Piper & Co., Mad River Mills; W. C. Gray, Piqua Woolen Mills; John L. Turm, Superintendent Zanesville Woolen Manufacturing Co.; E. Stuart & Co., Mechanicsburg Woolen Mills; Henry Fox, Urbana Woolen Mills.

Settled at Springfield, by sustaining the Committee.

SPRINGFIELD, O., Sept. 28, 1871.

Ohio State Board of Agriculture :

GENTLEMEN: I, the undersigned, hereby protest against the award made by the Committee on Needle Work, to a straw hat.

The premium given by the committee on Entry No. 39, is not such as would be justified by the merit of the goods, and ask the Board to change the same.

I am yours, very respectfully,

OMAR KLEINBERGER.

The Board sustained the action of the Committee.

SPRINGFIELD, O., Sept. 29, 1871.

State Board of Agriculture :

GENTLEMEN: We wish to enter a protest against the payment of premium on drain tile, awarded at State Fair, closing to-day. We claim the premium for the following reasons:

- 1st. Our tile are made from better material.
- 2d. They are smoother, hence less liable to collect sediment.
- 3d. They are more evenly burned—none of ours are fire cracked, while some of their's are very much cracked.
- 4th. We show greater variety—we show round, horsehoe, sole pipe (flat bottom on one side with round caliber,) and egg-shaped, (flat bottom with egg-shaped caliber.) They show round and sole tile only. We have seventeen (17) different sizes, they but (9). We, connections and crooked tile, for making courses in ditches, they neither. We collar tile, they none.

- 5th. Our tile are very much stronger than their's.

As our tile took first premium last year, they are on deposit at Columbus, to which we would refer you, as compared with their specimens this year.

For reference as to our veracity, we would give you Major John C. Baker, of Mechanicsburg, and James Fullington, Ex-President of your Honorable Board, or any other person in this vicinity, with whom you may be acquainted.

Yours very respectfully,

MAHAN & MORRIS,
Mechanicsburg, O.

The Board sustained the action of the Committee.

On motion of Dr. Warder, the following change was made in Rule III:

RULES FOR THE ORGANIZATION AND MANAGEMENT OF COUNTY AND DISTRICT SOCIETIES.

I. The Board of Directors for the management of county or District Societies shall consist of a President, Vice-President, Treasurer, Secretary, and not less than eight managers, to be elected at such time in each year as the societies shall determine in their constitution and by-laws. The President and Vice-President shall hold their offices for one year, and the managers for two years, and until their successors shall be duly elected.

The managers, at their first meeting after the first election held in pursuance of this rule, shall be divided by lot, as near as may be, into two classes; the terms of office shall expire, of the first class, in one year, and of the second class in two years, so that one-half of the managers may be annually chosen thereafter.

II. The Board of Directors shall elect a Treasurer and Secretary, who shall hold their offices for one year, and until their successors are elected.

III. Members of the Society must annually pay, not less, than one dollar to the Treasurer.

IV. The Treasurer shall keep a list of the members of the Society, so that he may be able to report to the State Board the number of members each year, and so that it may be ascertained who are entitled to vote for officers.

V. County or District Societies may open their premium lists to all persons, without restriction, except on field crops, which shall be confined to the county or district.

VI. Competitors for premiums, residents of the county, must be members of the Society.

VII. All articles offered for premiums must be owned by the person offering the same, or by some member of his or her family.

VIII. Awarding committees must comply with the provisions of the law requiring competitors for premiums on crops and other improvements to furnish full and accurate statements of the process, expense of culture, production, &c.

IX. Competitors for premiums on crops shall be required to have the ground and its products accurately measured, and satisfactory proof, under oath, must be furnished by each competitor.

X. Each Society shall have duly prepared an annual report, and shall report the same to the State Board of Agriculture, on or before the annual meeting of said Board, as prescribed to be held by the sixth section of the "act for the encouragement of agriculture," passed February 20, 1861.

XI. Said report shall contain the following:

1. A list of the premiums awarded at the previous annual fair.
2. A copy of the published abstract of the Treasurer's account, as the same was published, in conformity with the third section of the above named law.
3. All statements of competitors for premiums on crops or other improvements in agriculture, detailing mode of tillage, &c., &c.
4. A general account of the proceedings of the Society, the number of its members, and the prospects of its progress and usefulness.
5. A statement of the principal crops raised in the county or district; an estimate of the amount of each raised; the average yield per acre; the striking characteristics of the previous season; the names of the destructive insects which may have injured crops; and such other facts as will tend to give a full view of the state of agriculture in each county or district, so that the same may be embodied in the succeeding annual report, made by the State Board to the Legislature.

XII. The Secretary of every County Agricultural Society which receives money from the county treasury, shall cause the official proceedings of the Society to be published in some newspaper of general circulation in the county.

The Treasurer of every County Agricultural Society which receives money from the county treasury, shall annually file with the auditor of his county, a detailed statement showing the receipts and disbursements of the society for the preceding year; and until such report is so filed, no money shall be paid out of any county treasury to any Society which may neglect or refuse to file such report.

This entire series to be reviewed at the February meeting.

The Secretary read the following, and, on motion, it was ordered, that John H. Klippart be appointed a committee of one, to correspond with said War Department, and enter into negotiations for keeping weather record, and when the Agricultural College is ready, then to transfer all to the College :

WAR DEPARTMENT,
OFFICE OF CHIEF SIGNAL OFFICER, DIVISION OF
TELEGRAMS AND REPORTS FOR THE BENEFIT
OF COMMERCE.

Washington, D. C., July 20, 1871.

To Mr. John H. Klippart,

Sec. of the Ohio State Board of Agriculture, Columbus, O. :

SIR—Under a joint resolution of Congress, approved Feb. 9, 1870, a copy of which is hereto annexed, the duty was imposed upon the Secretary of War of causing meteorological observations to be taken, and of giving notice, by telegraph and signal, of the approach and force of storms. By order of the Secretary of War, the Chief Signal Officer of the Army is especially charged with the execution of this duty.

It will be observed, that the language and original intent of the resolution contemplated directly the benefit of the commerce of the United States. Indirect advantage would naturally accrue to other industries, but it is certain that the reports of this Division may be directly useful to agriculture, since, after sufficient notice, the operations of the farm might frequently be so ordered as to avoid the serious losses occasioned by storms. It is also true that the observations taken and made public, which involve particulars regarding heat, moisture, wind, rain, cloud and electricity, from which statistics, valuable for particular localities, are compiled, and general laws relating to climate can be deduced, must be of importance to every scientific or intelligent agriculturist.

The Secretary of War has directed the Chief Signal Officer to render the work of this Division available for the benefit of agriculture, to the full extent of the power so far granted by law, and of the facilities attained or attainable by this office—the latter being limited by the appropriations made, or to be made, by Congress.

The following-named stations are now established, viz. : Portland, Me. ; Boston, Mass. ; New London, Conn. ; New York City, N. Y. ; Philadelphia, Pa. ; Baltimore, Md. ; Washington, D. C. ; Wilmington, N. C. ; Charleston, S. C. ; Norfolk, Va. ; Oswego, N. Y. ; Rochester, N. Y. ; Buffalo, N. Y. ; Cleveland, O. ; Toledo, O. ; Detroit, Mich. ; Chicago, Ills. ; Milwaukee, Wis. ; Grand Haven, Mich. ; Escanaba, Mich. ; Marquette, Mich. ; Davenport, Iowa ; Leavenworth, Kansas ; Cairo, Ills. ; Cape May, N. J. ; Galveston, Texas ; Memphis, Tenn.

ALBERT J. MEYER,
Brig. Gen., and Supt. of Signal Corps.

The Secretary read the following, and it was referred to the new Board to elect by ballot :

DEPARTMENT OF AGRICULTURE,
WASHINGTON, D. C., Dec. 20. 1871.

J. H. Klippart, Columbus, Ohio :

SIR—By the act of the 2d July, 1862, Congress donated to the several States a portion of public lands, in the ratio of their population, for the purpose of establishing agricultural colleges, thereby evincing a purpose to promote that great interest through the

instrumentality of the respective States. Many colleges have been, and doubtless many more will be established. State Agricultural and Horticultural Societies, and Boards of Agriculture have also been established by law in many States. A correspondence and consultation between friends of these interests have led to the conclusion that a convention of delegates representing them, for the purpose of conferring upon subjects of mutual interests, would promote the good of all. It has been suggested that I take the responsibility of inviting such a meeting. I therefore propose, that each Agricultural College, State Agricultural Society, State Horticultural Society and State Board of Agriculture, depute two delegates, to meet in convention at the city of Washington, on Thursday, the 15th of February next, to take such action regarding the interests of agriculture, as they shall deem expedient.

I am, very respectfully,

FREDERICK WATTS,
Commissioner.

New Board elected J. H. Klippart and Wm. B. McClung.

The following committees were appointed:

Messrs. McClung, Richmond and Warder, Committee on Essays on Forests.
O. S. Murray, Foster's Crossings; Daniel Millikin, Hamilton; Adam Turner, Medina Co.; — Cole, Michigan; Peter Langwell, Crawford Co., Competitors.

Messrs. Buckingham, Harmount, and McClung, Committee..
J. W. Sadler, Essay on Muskingum County.

Messrs. Delano and Harmount, Committee on Field Crops.
Taylor, of Sandusky, potato; McMullen, of Irwin, corn.

Committee on Executive Committee's account: Messrs. Jamison, Cannon and Harmount.

Committee on Treasurer's account: Messrs. Delano, McClung and Richmond.

Committee on Rec. Secretary's account: Messrs. Cannon and Sprague.

Mr. Cannon offered the following resolution, which was adopted:

Resolved, That the Ohio State Board of Agriculture, together with its officers, visit the Ohio Agricultural and Mechanical College, during this session, at its earliest convenience.

Committee on Executive Committee's account reported vouchers correct. The committee was authorized to make out detailed statement and give to Secretary.

The committee appointed to examine the accounts and vouchers of the Executive Committee have performed that duty, and find the amount placed in their hands to have been paid out for material and labor.

S. HARMOUNT,
JAS. B. JAMISON,
R. P. CANNON.

Committee on Recording Secretary's account reported. Report accepted, and committee discharged.

Your committee appointed to examine the books, vouchers and report of the Recording Secretary, have carefully examined said papers, and beg leave to submit the following report:

That the books are carefully and correctly kept, by recording detailed account of receipts and disbursements, a transcript of which is herewith submitted.

We also find vouchers duly signed for all disbursements made.

The general summary of the Recording Secretary's books shows the present condition of the Treasury of the Society to be as follows:

Assets of all kinds.....	\$15,394 00
And the liabilities are.....	5,553 03
Showing balance of.....	\$9,840 97

R. P. CANNON,
L. B. SPRAGUE,
Committee.

TREASURER'S REPORT.

COLUMBUS, Ohio, Jan'y 1st, 1872.

JAMES BUCKINGHAM, *Treasurer, in account with Ohio State Board of Agriculture.*

1871.		DR.
Jan'y.	Received from Clark Co. Agricultural Society, police, &c.....	\$918 57
May.	State of Ohio appropriation.....	3,000 00
July.	Received for \$150 gold coupons and premiums.....	166 00
Aug.	“ from J. Park Alexander, on interest account.....	75 73
Sept.	“ “ sale of admission tickets.....	13,651 25
Sept.	“ “ sale of privileges.....	2,809 00
Oct.	“ “ Clark Co. Agricultural Society, subscription.....	5,000 00
Nov.	“ “ Clark Co. Agricultural Society, amphitheatre.....	831 00
Nov.	“ “ J. Park Alexander, on interest account.....	109 06
Dec.	“ “ Ex. Com. unexpended balance.....	26 18
Dec.	“ for \$150 gold coupons.....	162 00

Total receipts.....\$26,749 29

CONTRA.	CR.
By checks of the President, countersigned by the Recording Secretary, redeemed from Jan. 1st, 1871, to Dec. 30, 1871, inclusive, as per bank book and cancelled checks herewith presented.....	\$31,462 77
By overdraft on the Treasury, assumed Jan. 1st, 1871.....	204 60
Total credits.....	31,667 37
Showing overdraft of	4,918 08
	\$26,749 29

The above is a correct statement of my account with the Ohio State Board of Agriculture for the year 1871. I have in my hands, belonging to the Board, U. S. 5-20 coupon bonds for \$5,000, and a note of the Montgomery Co. Agricultural Society, in suit, for \$1,480, and accrued interest.

JAMES BUCKINGHAM,
Treasurer O. S. B. A.

COLUMBUS, O., Jan'y 2d, 1872.

We, the undersigned, a committee to examine the accounts of James Buckingham, Treasurer of the Ohio State Board of Agriculture for the year 1871, have carefully attended to that duty, and find that the account is correct; that no checks or accounts have been paid, except on the draft of the President, countersigned by the Recording Secretary.

W. B. McCLUNG,
D. C. RICHMOND,
L. G. DELANO,
Committee.

If the parties presenting samples of Corn and Potatoes as competition for field crops, have complied with all the rules, the committee decide that they are entitled to the premiums as published.

S. HARMOUNT,
L. G. DELANO.

EVENING SESSION.

Judge Lang in the chair.

On motion of Mr. Harmount, it was

Resolved, That the Treasurer be instructed to sell the \$5,000 U. S. Bonds (to the best advantage), and place to the credit of the Board.

On motion of Mr. Cannon, Messrs. Buckingham, Jamison and Harmount were appointed a committee to investigate and report on the accounts of the Executive Committee, Treasurer and Recording Secretary, being the unfinished business for the year 1871.

JANUARY 4th, 1872.

New Board met in the State Agricultural Rooms.

On motion, Hon. R. P. Cannon was nominated Chairman, for the purpose of organizing the Board.

James Buckingham was elected President, for one year.

Simpson Harmount " " Treasurer, " "

Jno. H. Klippart " " Cor. Sec., " "

Henry S. Babbitt " " Rec. Sec., " "

Salaries to remain the same.

Resolved, That the Secretary advertise for proposals for the State Fairs for 1872 and 1873, in the following places, viz.: Zanesville, Mansfield, Columbus, Cleveland, Sandusky, Toledo, Dayton and Cincinnati. Said proposals to embrace the following, viz.: The free use of an accessible tract of land, not less than fifty acres, to be well supplied with water, and an annual sum of five thousand dollars, to be placed at the disposal of the Board on or before the first day of June; or in lieu of this, that the place soliciting the fairs, fit up and complete the grounds ready for the fair, to the full satisfaction of the

Ohio State Board of Agriculture, made under the direction of a superintendent appointed by the State Board. Proposals to be received by February 10th.

Resolved, That the Secretary be authorized to make the best terms possible (not to exceed last year) for two thousand copies of the Convention Reporter, to be distributed as follows: 200 copies to members of the State Board, and an average of 25 copies to every Society represented in the Convention.

Resolved, That Mr. Buckingham be appointed a committee to solicit from Dr. N. S. Townshend the manuscript copy of his address, prepared for the present Convention.

Resolved, That Rules and Regulations for the organization and management of County and District Societies, be amended at the February meeting. Rule III amended now.

Resolved, That the officers of this Society be instructed to make application to the officers of the several Railroads, traveled by members of the Board in the discharge of their duties, for annual passes over their roads.

Resolved, That the State Fair for 1872 be held September 2 to 6 inclusive, and that the Secretary advise the Indiana, Illinois, Wisconsin and Michigan Boards of Agriculture of this resolution.

It was

Agreed, That in the Premium List for 1872, the premiums offered on Herefords, be increased.

Agreed, To increase the premiums on Alderney cattle.

Agreed, To make a premium for Ayreshires.

The Board adjourned to meet February 20th, at 10 A. M.

PROCEEDINGS OF OHIO AGRICULTURAL CONVENTION.

The Twenty-seventh Annual Convention of the Ohio State Agricultural Society was held in the Senate Chamber at Columbus, on Wednesday, January 3d, 1872.

FIRST DAY.

MORNING SESSION.

The Convention assembled at 10 o'clock, and was called to order by the President, Judge William Lang, of Tiffin, Seneca county.

The roll was called by John H. Klippart, Secretary, and seventy-eight counties reported representatives in the Convention, as follows :

Gabriel Hefner.....	Allen.
J. B. F. Sampsell	Ashland.
H. J. Nettleton.....	Ashtabula.
Isaac Stanley.....	Athens.
Shepherd Davis	Belmont.
L. B. Penn	Brown.
Fergus Anderson	Butler.
E. W. Stafford.....	Champaign.
Peter Sintz.....	Clarke.
J. L. Weaver.....	Clermont.
Leo. Weltz.....	Clinton.
J. L. Crowell.....	Columbiana.
J. S. Elliott	Coshocton.
Josiah Koller.....	Crawford.
D. L. Wightman.....	Cuyahoga.
C. C. Walker.....	Darke.
W. D. Hill	Defiance.
L. S. Felkner.....	Delaware.
C. Caswell	Erie.
B. W. Carlisle.....	Fairfield.
H. Kirk.....	Fayette.
John M. Pugh.....	Franklin.
D. W. H. Howard	Fulton.
G. H. Ford.....	Geauga.
W. McPherson.....	Greene.

Stephen Potts.....	Guernsey.
Theophilus Wilson	Hamilton.
H. P. Gage.....	Hancock.
J. C. Stevens	Hardin.
Samuel Ellett.....	Harrison.
J. M. Haag.....	Henry.
P. N. Wickerham.....	Highland.
C. W. Clowe	Hocking.
C. R. Eastman	Huron.
B. Kahn	Jackson.
Robert Miller	Knox.
J. Warren.....	Lake.
Joseph White	Licking.
D. W. Harris.....	Logan.
C. S. Mills	Lorain.
R. C. Thompson.....	Lucas.
Jeriah Swetland.....	Madison.
F. W. Beardaley.....	Mahoning.
Peyton Hord.....	Marion.
Gaylord Thompson.....	Medina.
S. N. Titus.....	Meigs.
G. W. Radabaugh.....	Mercer.
Newton Smithers.....	Miami.
A. B. Covert	Monroe.
Nicholas Ohmer	Montgomery.
John S. Adair.....	Morgan.
Samuel Geller.....	Morrow.
James Buckingham.....	Muskingum.
Irwin Johnson.....	Ottawa.
P. W. Hardesty.....	Paulding.
Ed. Rose.....	Perry.
Vause F. Decker.....	Pickaway.
R. P. Cannon.....	Portage.
J. M. Daugherty.....	Preble.
Wm. Blodgett.....	Putnam.
J. W. Myers.....	Richland.
Lincoln Goodale Delano	Ross.
W. E. Haynes.....	Sandusky.
James M. Newman	Scioto.
Wm. H. Gibson.....	Seneca.
J. R. Kendall.....	Shelby.
J. H. Bair	Stark.
James Hammond.....	Summit.
H. Austin	Trumbull.
S. Harmount.....	Tuscarawas.
Geo. Sinclair	Union.
H. Weible.....	Van Wert.
Geo. W. Carey.....	Warren.
W. F. Curtis	Washington.

Cornelius Smith.....	Wayne.
Isaac R. Sherwood.....	Williams.
James W. Ross	Wood.
Mc M. Carey.....	Wyandot.

Wm. F. Curtis, of Washington county, moved that a committee of three be appointed on Order of Business.

The President appointed on said committee, Wm. F. Curtis, of Washington county, N. J. Turney, of Pickaway, and Peyton Hord, of Marion.

PRESIDENT'S ANNUAL ADDRESS.

President Lang then delivered his annual address. He said :

Gentlemen of the Convention : Since our last annual convention in this place another year has rolled off into the ocean of time with all its events, great and small, with all its sunshines and its storms, its blessings and its sufferings, its smiles and its tears.

Permit me on this occasion to congratulate you on the enjoyment of life and health, and to add my friendly wish for the happy continuance of the same during the ensuing and many future years.

My predecessors have made it almost customary that an annual address be delivered, on calling this convention to order, by the presiding officer, and I can only regret to say to you that, instead of an elaborate speech, I have only a few scattering thoughts as a substitute.

From the close of the State fair at Springfield up to this hour my time has been so closely occupied with other pressing duties, that the desire to read to you an address on this occasion was doomed to die as such.

Amongst the very many subjects in connection with the mission of this organization, I would, if I could, talk to you on the rights of labor, and the claims that productive industry generally, has upon the law makers of the country, but must abstain.

And in view of the fact that a new Legislature has just been convened and organized, with its members, the servants of the sovereign people of this great commonwealth, fresh from the people, knowing and understanding fully their various wants and requirements, and possessing both the will and capacity to so legislate as to meet them all by good and salutary laws, I have no suggestion to make as to what action this convention should or should not take requesting the General Assembly to pass, change or amend this law or that.

UNEXECUTED LAWS.

Many of you, gentlemen, will remember with me the warm debates and the strong resolutions we have had and passed in this body on wool culture and for the protection of the wool growers. "Poor dog Tray" had very few, if any, friends here. Laws were enacted for the taxation and the killing of dogs, and consequently for the protection of sheep, and for the punishment of the owner of sheep killing dogs, and all that; and this day the sheep interest of the State is as much subject to the tender mercies of the dogs as at any time during the State's history.

It is folly to enact laws that the people will not enforce. The best of laws become dead letters when they are allowed to be violated with impunity. I might point out to you, as another proof of this fact, the numerous temperance laws of this State, and if the

statistics on the subject are to be regarded as honest, there is to-day more ardent spirits sold and drank as a beverage in this State than at any other time in the past. Such is the fate of all laws, however wise and salutary, which the people either refuse or neglect to carry into successful operation.

MARCH OF CIVILIZATION.

In the march of events, as well as in the march of civilization, it has hitherto been very truly said that "westward the star of empire takes its way." In this march of empire, from the time great hosts of people left the grassy plains of Asia, crossed the Ural mountains into Europe, up to our own time, two mighty waves were observable. The first was the wave of the sturdy pioneer who laid the forests low, ploughed the virgin soil, raised a few crops, when in their opinion the soil becoming poor and exhausted, moved westward still, and westward ever, prosecuting the war upon the forest wild, and searching for new and fresh soil, finding and exhausting that, until the wave turned up all standing on the eastern shore of the great Pacific ocean.

The star of empire no longer takes its way westward, unless the islands of the ocean have forests to fell, or Asia gives way to the woodman's axe. Woe be to either if trees they have.

We, my friends, find ourselves in the second and succeeding wave. We have taken this soil, given as over-exhausted and poor, struck *our* stakes and erected *our* homes upon it. Here the first, great and all important question was, and still is, how to restore this soil to productiveness again. The genius of science and mechanism of our day and generation have taken hold of the work with the earnestness, the energy, the perseverance that knows no failure, characteristic only of our own wonderful time, and the places that once knew but the humble cabin of the pioneer are occupied by beautiful towns and cities, farm houses and barns.

Flocks of sheep and cattle ruminant over the same hills and valleys that not long since echoed back the hideous howl of the wolf, and millions of happy people erect monuments to their own honor in the structure of institutions of learning and benevolence, and altars to the worship of God.

The man of science stands by the farmer and aids him with his counsel in the preparation of his soil and the cultivation of his crops. The ingenious mechanic furnishes the agriculturist with every implement necessary to shorten his labor, lighten his task and prosecute his work the more successfully.

Railroads, now already forming a net-work over the country, afford a better market for our products, and remunerative returns. The scientific man, the good and wise of our age, the inventive genius that so characterizes our day, chemistry, botany, geology, all, all have entered the service in this great mission. Is it not worthy of the attention and the fostering care of the law maker and the statesman? Let it be our duty to see to it that productive industry wears no shackles on its hands.

NATIONAL AGRICULTURAL BUREAU.

We have reason to rejoice in another achievement of our day, and that is, the establishment at the capital of the nation of a Bureau of Agriculture. Young in day very true, but already promoting great good in collecting and diffusing useful knowledge in the pursuit of agriculture. Why the head of that bureau, the nation's representative of the nation's source of all its wealth, is not entitled to a seat in the cabinet of the President and become one of his counsellors and advisors, is one of the very many things, I am sorry to say, I don't know.

CONSTITUTIONAL CONVENTION.

The good people of our State, at the election last October, saw proper to say that a convention shall be called to revise, alter or amend the constitution of the State. In my own notion of things I did not think it wise, for I failed to see the necessity that would warrant the requisite, but very great expense, the tax-payer must meet and pay; but the *vox populi* doctrine is law with me and I humbly submit. Allow me only to say here and now that when that election takes place let us be faithful to our own interest, and see to it that agriculture and the mechanic arts are fully represented in that body by men of heads and hearts fit for the place.

The farmer, the stock breeder, the manufacturer, the fruit grower, productive labor generally, form the wealth of the State, and their interests are paramount to all others. Give us a light, simple, cheap, economical government, faithfully and honestly administered, apply no shackles of any kind, and all these great interests will very easily protect themselves.

When, some twenty-five years ago, a few men with heads and hearts at the proper places conceived the thought of calling into life the society you here to-day represent, they little thought of the magnitude of the annual exhibitions of your board, and the great popularity, based upon the general utility, these exhibitions have this day obtained among the people.

Your organization is now one of the institutions of your State, entitled to the fostering care of your law making power, and I am sure that no protection and care it demands shall be withheld with impunity.

PERMANENT LOCATION OF THE STATE FAIR.

I would also call your attention to another subject that may be proper to discuss and act upon now, for it will sooner or later demand the action of this body. You are all aware, gentlemen, that the moving about from place to place of your annual State fairs is attended with great expense. The fixing up of the grounds, labor and materials necessarily cost large sums of money, each time.

The lumber remaining on hand at the close of the fairs, often has to be sold at great sacrifice, and thousands of dollars, the earnings of your board, have been unavoidably wasted.

It was thought best to persevere in this roving nature of our fairs, for the purpose of keeping up and alive the interest of our people in the matter, and to accommodate thereby every section of our State. Whether the State fairs should be permanently located at some central point in the State, affording ample railroad facilities and sufficient hotel accommodation, and where proper grounds can be secured, etc., etc., or whether, on the other hand, the old practice had better be kept up for the future, are questions much easier raised than answered.

In the event of the permanent location of your State fair at any point, some legislation may become necessary providing the board with power to secure title to the grounds and to otherwise carry successfully into effect the will of the people in behalf of that interest.

On motion of Fergus Anderson, of Butler county, ex-members of the State Board and members from county societies (not regular delegates to the convention) were invited to take seats and participate in the discussions.

On motion, Messrs. Curtiss, Turney and Hord were appointed a committee to prepare business, and its order, for the convention.

AGRICULTURAL COLLEGE.

The following resolution was offered by S. Harmount :

Resolved, That the thanks of this convention is due and hereby tendered to the trustees of the Ohio Agricultural and Mechanical College for the speedy location of the same and the commendable progress made in its construction.

By request Wm. B. McClung, superintendent, made a few remarks in reference to the progress of the improvements upon the Agricultural College Farm, giving the aggregate receipts, expenditures, etc., from a written report which is published in full elsewhere in this volume.

Judge T. C. Jones, of Delaware: I am very much obliged to the gentleman who had the courtesy to offer this resolution. Those who have not been connected with the agricultural board are probably not aware of the difficulties we have had in choosing the location and in progressing with the work, so far as we have made progress. There have been all sorts of opinions as to what an agricultural college should be and as to where it should be. We have been opposed by various interests, and there is still a great deal of doubt, to say the least, in the minds of community as to the success of an institution of this sort.

I think the great idea of the agricultural college is this: that it is as necessary that the sons of farmers, and farmers themselves, should be educated, or that a proportion of them should be fully and liberally educated, as it is that men in any other calling should be educated.

I have had occasion to refer heretofore, as have others, in discussing this question, to the fact that the proportion of the number of farmers who are in public life—in the national or State legislatures—is becoming less. In our early history State governors, members of Congress, prominent men everywhere, were practically connected with agriculture. And it has been supposed that it was necessary for the welfare of a State, necessary for the welfare of the nation, that not only the energy, but that a large proportion of the brains of the country, should be engaged in agriculture, because without the representation of agriculture it was impracticable to maintain a free government. Cities, with all their advantages, have disadvantages, and even Jefferson, with all his confidence in free government, could not exactly foresee how a republican government could be maintained with such a population as we have in our large cities.

There are matters that ought to be considered when applications are made to the government for aid in projects like this, which tend to advance the interests of agriculture, and to advance the interests of agriculturists.

Now, what the trustees of the Agricultural College have done, is this—and I wish to call the attention of this Convention to it, that they may

keep it in mind, and that they may give their views of the subject to their members in the legislature. You are aware that a grant of land was made by Congress to the several States, for the purpose of creating a fund to support professorships and maintain these colleges after they were erected. The trustees of the Agricultural College, having no funds, were obliged, in locating the institution, to ask that donations be made by the various localities competing for its location, and the county of Franklin proposed to donate three hundred thousand dollars—the whole fund. That is more than half the sum we get. We now have the congressional grant, and this exceedingly liberal donation. Out of this donation by Franklin county, this farm has been purchased and paid for. We are now proceeding to erect a college building also, out of this fund, and I refer you to the reports that will be made, giving the progress made in the erection of this building and other improvements, which will satisfy the public, or ought to satisfy the public, that this enterprise is on such a footing, and that there are such hopes for it that the State itself ought to give it some encouragement and do something for its support.

It has been found impracticable, you are aware, to maintain an institution of learning of high degree, without substantial encouragement. The expense of educating our young men—the sons of our ordinary farmers—is too great to be defrayed, unless there is aid from the public. It is upon this idea that colleges have been endowed everywhere. Many colleges have the aid of religious denominations, and large donations have been made to assist them, and many of them have grown up and attained a great reputation. A degree from many of these institutions is considered a great aid to a young man when he starts out in life. Now, the degree to be conferred by the Agricultural College should not be inferior to any of these, so that a young man, who has a degree from it, shall start out with as great an advantage as a young man with a degree from Harvard or Yale, or any other. But this cannot be done unless it receives aid from the State. In other States that has been done. In the State of Iowa, I believe, \$200,000 has been thus appropriated for building up their Agricultural College, but in Ohio there has been nothing of that sort done. I have no doubt, however, gentlemen, that the legislature of Ohio will do their duty in this respect. And I think the prospect is that this college shall be worthy of the expectations of its most ardent friends, and that these expectations will be more than realized in the future of this institution.

I do not wish to take up the time of the Convention, but merely rose as one of the board of trustees of the institution, to tender my acknowledgment for this appreciation of our labors, and to remind you that t

will be utterly impossible to do what should be done in this work, and accomplish the great ends for which this institution has been established, unless the enterprise is properly sustained.

The Business Committee made the following report :

Your Committee on Order of Business beg leave to report that the subjects for discussion be taken up in the following order :

First, Col. Innis, on the Game Laws.

Second, Professor Orton, on relations of Geology to Agriculture.

Third, Dr. Townshend, on the Future of Agriculture in Ohio.

Fourth, Col. S. D. Harris, Mission of the Agricultural Press.

Fifth, Dr. Warder, on Timber Planting.

Sixth, Col. Richmond, on Exhaustion of Soils.

Seventh, Resolutions.

Eighth, Nominations of officers to fill vacancies in the State Board.

Your committee recommend that the nominations be made at the afternoon session, and that evening session be held and the election take place at 7 o'clock P. M.

Respectfully submitted,

W. F. CURTIS,

N. J. TURNEY,

P. HORD,

Committee.

Prof. Edward Orton, of Antioch College, was then introduced and delivered an address upon the

RELATIONS OF GEOLOGY TO AGRICULTURE.

Mr. President and Gentlemen of the State Agricultural Convention : I have been invited to address you on "the Relations of Geology to Agriculture." The terms of the invitation, therefore, obviate the necessity of my attempting to prove, in any extended line of argument, that there are relations between Geology and Agriculture.

Geology, as one of the broadest and most comprehensive of the great divisions of science, has intimate and well recognized relations with all the other great divisions, for instance—with Astronomy—with Physics—with Chemistry—while such branches as Mineralogy and Physical Geography have already been reduced to provinces in its wide domain—and as to Botany and Zoology—the sciences respectively of vegetable and animal life, so close is the connection between them and Geology, that they are hardly sure of maintaining an independent existence.

It is no disparagement to Agriculture to deny it a place among the original and leading branches of Natural Science. These main divisions are characterized by a certain degree of independence—each of them having methods and laws of its own. They take hold largely of the fundamental properties of matter, and have, therefore, an element of universality, they are often applicable to more worlds than one—but Agriculture stands connected in its origin and scope—with man's necessities, is, in fact, the creature of those necessities and has no existence separate from them. The laws and principles which it uses, it does not discover or establish within its own field, but it adopts and borrows such as it needs from the sciences already named.

Now, as Geology has obvious relations with the sciences from which Agriculture is derived, as, for instance, with Botany, with Physics and Chemistry, it would be fair to

conclude, on general principles, that points of connection could be found between Geology and Agriculture itself. We are not left, however, to any uncertainty in regard to this point, for there is one broad field in which they manifestly and undeniably hold a common interest, in which they have a joint title. This common ground is the *soil*. The *origin* and *modes of formation of soils* are questions that belong to Geology, and are recognized as of fundamental importance in that science, while the *composition* and *uses of soils* constitute almost the sole interest of Agriculture.

It may be thought that this connection between the Geological history and the Agricultural uses of soils has only a scientific interest, and that it is devoid of practical value, but a closer examination will show that in agriculture, as in all the other callings of men, a large and thorough knowledge of the subject can always be turned to practical advantage. In fact, even a cursory examination of the modes in which soils are produced, cannot fail to suggest very valuable conclusions as to their management and preservation to every agriculturist.

I invite your attention, therefore, to a brief discussion of this question, (or rather to a few considerations) upon the origin of the soils of Ohio.

Before entering upon this discussion, however, a preliminary question must first be answered, viz :

DEFINITION OF SOIL.

What is soil ?

I answer, in the first place, negatively, that it is not necessarily the surface of the earth. That surface may be, once was, a floor of granite or limestone, a ledge of sandstone or a bank of slate.

Nor, in the second place, does this surface necessarily become soil when its materials have been ground to powder by mechanical agencies, or weathered into dust by the action of the air. A bank of shifting sand is scarcely more worthy to be called soil than is the sandstone rock from which it was formed ; nor does the simple loosening of the bonds of cohesion in a bed of black slate, make the blue clay that results from it, in any proper sense, a soil.

The truth is, the word is not used in any close and exact sense, but by it, those portions of the surface of the earth that are susceptible of tillage, are generally designated. Taking the word, then, in the usual sense, we can see that both the elements already named, enter into the definition. Soil, in every case, is largely formed from the rocky crust of the earth—from this crust reduced to a fine state of division by chemical or mechanical means, or by both combined. Chemistry could predict to us, from a knowledge of the composition of the crust, what mineral substances would be found most largely in the soil. They must be substances that are abundant in the earth, and they must be insoluble in water, for otherwise they would be removed from the surface by atmospheric agencies. Sand and clay meet both demands, and make the bulk of every soil.

But these statements do not complete the account. An element not yet named, must be added to the comminuted rock before a soil results. A certain proportion of organic matter—of matter that has been wrought with vital compounds by plants or animals—must be incorporated with sand and clay. A certain proportion, I say, but I do not mean a fixed proportion, for the organic matter varies between wide limits, sometimes constituting one-half, and sometimes not more than one-twentieth part of the total weight of the soil.

If, now, the question be repeated, what is soil ? we can define it to be, *disintegrated or pulverized rock, intermingled with organic matter, and thus made capable of furnishing foothold and sustenance to the plants which man cultivates.*

The definition, then, has led us to the origin of soil. It is essentially disintegrated rock. It is in no way an original formation, not the product of any creative fiat, but the result of forces now in action and whose action we can scan and estimate. The soil has a history which can be traced, and by means of which we are able to follow it through a series of changes to an earlier state. This series of changes was not accomplished in a day or a year. The time required for converting a ledge of solid rock into arable soil is doubtless to be counted by centuries, perhaps by millenniums, so that no one generation can see more than a small part of the work, in any given area accomplished, but still we are able to trace the whole history, from the fact that the process is always beginning, and that all its steps and stages can easily be marked in contiguous localities.

There are two great lines of action by which the rocks of Ohio have been turned into dust and wrought into the soils. One of them is chemical, the other mechanical. The first is universal and constant in its operations. The mechanical agency is subdivided into two, one of which belongs to the present order of things, and is everywhere in operation, the other belongs to limited areas and to definite periods. It accomplished its work in Ohio thousands of years ago, under widely different conditions from those which now prevail, and then disappeared from among the causes of geological change, that are here to be met with. Let us consider each of these agencies in its place.

I. ACTION OF AIR ON ROCKS.

The chemical action that is constantly at work upon the surface of the earth's crust.

This is nothing else but the action of the atmosphere with which we are all familiar. But as in too many other instances, familiarity sometimes hides from us the wonderful nature of the force engaged. Chemists have found that the earth is composed of many different kinds of matter, which have been named elements. More than sixty of these elements have been already described, but the great bulk of the globe, with its oceans of water and air, is composed of about a dozen elements, the rest occurring in small and often in very minute proportions. But to one of the 12 or 14 abundant elements, a royal part is assigned in the economy of the globe. It has been named Oxygen. One-half of all the solid crust of the earth that is accessible to us, is oxygen. Of the waters of the globe, eight-ninths are made up of the same substance. In water and in the earth, it exists in combination with the other elements, for almost every one of which it has strong affinity. But such was the abundance of oxygen in the original constitution of the globe, that after all the vast quantity had been used which we now find imprisoned in its various compounds in the earth and the ocean, there was still a notable surplus left in a free or uncombined state. This surplus we now find in our atmosphere, one-fifth of which is oxygen, and it is to this potent element that the all-important functions of the air must be directly referred.

I have said that the crust of the earth is very largely combined with oxygen, but many of the substances that the crust contains, are capable of uniting with a larger proportion of oxygen than they already possess. Whenever such compounds are exposed to the action of the air, its free oxygen solicits them, and a new compound is formed at the expense of the previous one.

This action of the oxygen of the air is greatly forwarded by the presence of vapor of water, which takes part both directly and indirectly in the changes that occur. The polished mold-board of the plow, to take a familiar example, if left exposed at night, is streaked or spotted with rust, just where the gathered dew has furnished a medium

through which the oxygen of the air could act. But as watery vapor is universally diffused, this condition of the activity of oxygen is never wanting.

Carbonic acid is another gaseous substance, found in the atmosphere, that takes a leading part in all such changes as have been indicated. This seemingly inert gas attacks with destructive energy some of the constituents of the finest rocks. Felspar, for instance, one of the elements of granite, is decomposed by carbonic acid, and the carbonate of potash which results—a compound, by the way, of infinite value to agriculture—can be readily dissolved and removed by rain; and as the felspar of the granite gives way, weakness and decay are introduced into the whole substance of the rock.

But one of the most important facts in this connection is the power which water holding carbonic acid in solution acquires of dissolving common limestone. But water holding carbonic acid in solution is the ordinary state of rain water. In other words, rain water dissolves limestone, a fact that we are familiar with in ordinary experience. The soft water that falls in rain and snow upon a limestone region is found to be *hard* as it issues in the springs of this same region, having dissolved a portion of the rock through which it passed. In fact, we find this bland liquid, water, the nearest approach to a universal solvent that the world contains.

The changes already alluded to make a part of what we commonly call *weathering*, a process which we see everywhere going on around us. It is generally accompanied by changes of color in rocks that are subjected to it. There are but few rocks that have been long exposed to the atmosphere which retain upon their surfaces the same color that a fresh fracture of the rock will show. This change in color marks the presence and progress of the chemical action of which we are speaking. These changes in color are often accompanied by changes in hardness, which are almost always in the direction of the disintegration of the rocks. When to this is added a greater degree of solubility on the part of the products of weathering than the original elements of the rocks possessed, we see that we have in the atmosphere agencies at work that can reduce to dust almost all portions of the crust, if only time enough is given them in which to work.

II. RAIN AND ICE.

But, in the second place, we find the various forms of this chemical agency greatly increased in efficiency by the co-operation of one division of the mechanical agencies to which reference has already been made, viz.: those mechanical agents that belong to the ordinary course of nature, which are in constant operation. We may limit, for our purposes, the agencies named under this head to two, viz.: rain and ice.

Under the former we do not now regard the kind of activity already noted—the dissolving power of rain water—but only the mechanical effect that it produces upon the rocks on which it falls. A rain drop certainly seems one of the weak things of the world, but before we set it aside as inadequate to produce geological change, we must take account of the aggregate of drops that make up the two hundred pounds, more or less, of rain due every year on every square foot of the State. A recently invented machine drills holes with great rapidity and exactness through plate glass by blowing against the surface a minute stream of sand. Footfalls on a city thoroughfare wear away the firmest paving stone, and in the same way the gentle but often repeated impact of the rain drop does something to wear away the solid rock.

We cannot, however, limit rain to this form of action. It not only washes away the weathered portions of the rocks, but the rills which it forms on the surface become agents of transportation, and by them the free particles are carried to continually lower levels, filling the crevices of the rocks, accumulated in depressions upon their surfaces,

or gathered in banks of sand and clay at the foot of slopes. Here, then, we find forces in operation the necessary results of which are to bring low the mountains, and with the waste to exalt the valleys and make the rough places plain.

It is not my purpose to trace the larger agencies of running water in producing geological change. The same agency whose feeble beginnings we can here mark are those that have built up all the stratified rocks of the earth, for rills unite in rivulets and these into streams of larger size, which in turn are gathered into the rivers that drain the slopes of a continent. If the materials thus transported to lakes and seas are through any cause brought above the surface of the water before they have suffered consolidation, we find in them soils, oftentimes of the highest degree of excellence.

We shall presently find that by far the largest portion of the surface materials of Ohio were arranged under some conditions of this nature, in the waters of inland lakes and arms of the sea.

The second of these agencies is more marked in its effects. When water passes from the liquid to the solid state, like other highly crystalline bodies it expands at the moment of solidification with sudden and irresistible force. We know the effect of this expansion of water confined in leaden pipes or crockery ware, and we can easily follow its action when it is confined in the joints and seams and interstices of the rocks, instead. A block of the firmest building stone, if caught by winter frosts before the quarry water has escaped from it, is often dissolved into its elemental dust. Every one can call up examples of rocks that perish in this way. Granite is sometimes quarried by driving soft wood wedges into the seams of the rock and then allowing the wedges to swell by the absorption of water. It cannot, then, be wondered at that ice wedges filling the same seams should do like execution. As seams are widened and crevices multiplied the all-embracing air presses in and avails itself of the new field for its activity which the frost has opened.

There are but few kinds of rocks, indeed, which can withstand the disintegrating power of the two groups of forces that I have now named. If the air cannot corrode them, the frost can rend them. Generally, however, frost and air work together harmoniously, each increasing the other's efficiency. The action of the frost is intensified as we go to higher latitudes, and there is a corresponding decrease in the energy of the air; but by far the most wonderful results in the disintegration of rocks are to be found in the warm climates of the world, and are to be referred to chemical agencies alone. In Brazil, beneath the equator, beds of gneiss, a crystalline rock allied to granite in composition, have been decomposed to a depth of a hundred feet, and granite itself, in India, is said to be disintegrated to a depth of forty feet.

FORMATION OF NATIVE SOILS IN OHIO.

And now let us bring these forces into action, and mark the results that they are producing here and now. Let us take one acre of limestone, a horizontal table, swept bare of all accumulations, lying open to air and dew, to rain and frost, and follow its fortunes. I shall take for my example a plateau of Adams county, that, for instance, on which West Union stands.

We shall not have long to wait to mark the discoloration of its surface. The crumbling stone acquires a darker color, from the higher oxidation of the iron which it contains. We can mark, too, the widening of all joints, the extension of all fractures. The surface is no longer a solid table, or series of such tables, but each block is reduced to countless fragments, which every year leaves smaller. Rain water dissolves and carries away a part of the rock, viz.: its carbonate of lime.

The composition of the rock is substantially—

Carbonates of lime and magnesia.....	94.00
Silica or sand.....	3.00
Alumina or clay.....	3.00
Total.....	100.00

The sand and clay being insoluble, as has been already noted, are left behind to make the bulk of the forming soil, but the solution of the limestone goes on until it is reduced from ninety-four hundredths in the parent rock to four hundredths in the resulting soil.

I have sometimes heard the doctrine advanced by practical men that lime can be of no service as an application to "limestone land," as the soil produced from limestone or limestone gravel is often styled, but the fallacy of such a conclusion is obvious from the fact just given. "Limestone land" is only formed by the removal of the limestone from the land.

The incorporation of organic matter with the forming soil began at the very beginning of its history. Lichens and mosses crept over the surface of the rock before it was abraded even, using it for foothold only, and drawing all their sustenance from the air. Weeds took root in the crevices when they were first filled by the crumbling fragments. Little by little, plants of higher organization venture in, availing themselves of the supply of organic matter left by their humbler predecessors. Each generation leaves more favorable conditions than it found. We may call the process complete, or say that the rock is turned to soil, when over our limestone plain we find an ample and diversified forest growth established. But the deepening of the soil still goes on, for roots, as they descend, furnish channels by which air and water can follow, and as they decay they give rise to abundant supplies of carbonic acid, which in turn takes part in the work of degradation. Here, then, is a specimen of the result, a native limestone soil from south-western Ohio. You will observe its composition, and compare it with that of the rock from which it was formed. It contains—

Organic matter	9.80
Silica or sand.....	47.84
Alumina or clay	31.26
Iron, sesquioxide	5.84
Carbonate of lime	2.94
Carbonate of magnesia	1.20
Phosphate of lime .....	.56
Potash and soda .....	.96
Total	100.40

You will notice the great condensation or concentration that has taken place in the change from rock to soil. If the specific gravity of this native soil were the same as that of the rock from which it is derived, it would require thirteen feet of limestone for every foot of soil; but as its specific gravity is only about one-half that of the rock, a corresponding increase in thickness must be provided. In other words, to form the two feet of native soil that are found on the table lands of southern Ohio, not less than fifty to seventy-five feet of the parent rock must have been disintegrated.

In the analysis of this native soil already given, it will be observed that one and one-half per cent. consists of Potash, Soda and Phosphate of Lime. Now, none of these substances were reported in the analysis of the limestone rock previously given. But they have not come to the soil from the skies, nor have they been created out of nothing,

nor, finally, have they been formed from the transmutation of sand or clay, or any other elements. The truth is, they were present in the rock, but in such minute proportions as to elude observation, unless they were made the objects of special search. This is apparent from the very small amount that is found even now, after all the concentration that has taken place. But although the quantity of these substances is small, their office is not insignificant. They constitute the very life of the soil. Unlike the sand and clay which make its bulk, and which by their suitable admixture confer a proper physical character upon it, and whose office ceases with giving foothold to vegetation, these elements form an indispensable part of the food of all the higher plants. Their presence confers fertility upon a soil; their absence is sterility; their exhaustion is the exhaustion of the soil itself. They have been carefully sought out by all the generations of plants that have grown here. Every nook and corner of the soil has been called upon for its quota of these invaluable elements. Taken in by the rootlets, they have been brought into the general circulation to be largely used in leaf and seed, and when leaf and seed have fulfilled or failed in their offices and are restored to the soil, they enrich its surface not only by the organic matter that they have borrowed from the air, but in a still greater degree by the inorganic elements of plant-food that they have gathered in their growth.

RATES OF GROWTH AND KINDS OF SOILS AS DETERMINED BY GEOLOGY.

There are great differences in the various geological formations of Ohio as to the readiness with which they can be converted into soil. Some of them—as the shales of the Cincinnati Group, for instance—are disintegrated as soon as they are exposed to the air, and scarcely require more than disintegration to fit them to sustain the higher growths of vegetation; but generally a long period of weathering and progressive improvement must elapse before a result to be recognized as soil is obtained.

There are greater differences in the rocks of Ohio as to the *kinds* of soils that they are able to produce, when they have been carried through all the stages of change and improvement of which they are susceptible. Some of them can form only thin and barren lands, suited at best to a narrow range of products, because of their poverty in the essential elements of plant-food; while others again, and a much more extensive series, are surprisingly rich in all that the varied groups of cultivated crops require.

These native differences in the rocks from which soils are derived have their own explanations, explanations connected with their history and modes of growth in the ancient seas in which they were deposited, and though such a topic is legitimately connected with the origin of our soils, it would lead us too far from our present purpose to consider it here.

I have spoken thus far of the native soils of Ohio, but in the sense in which I have used the word, there is but a small portion of the State that possesses native soils. They are confined to the extreme southern and to the eastern sections of the State, and there they hang upon the slopes of hills or cap insulated summits, seldom occupying any wide and consecutive areas. The two forms of disintegrating agents, however, that have been already noted, are not confined to the native soils alone, as might be inferred from our treatment thus far, but are united with the third great agent in producing by far the largest part of the soils of the State.

III.

I proceed, then, in the third place, to speak very briefly of this agent, by which more than by any other the rocks of Ohio have been prepared for the service of man.

Every intelligent observer of the soils of the State, knows that a very large proportion

of them have not been formed, in all particulars, according to the process already described. They are not "to the manor born," but are foreign to the rocks they cover, like the granite hard-heads or lost rocks, that everywhere dot their surface. Beds of sharp sand are found overlying limestone strata, and clean limestone gravel covers sandstones and shales, while heavy beds of blue clay are spread indifferently over all the formations of the State.

The forces to which we must appeal for the explanation of such effects, belong to a past epoch, and are so far removed from the safe ground of our familiar experience, that the enunciation of them, naturally enough, provokes doubt or incredulity in one who hears it for the first time. In the great theories that have established themselves in the Geological world as to the causes and history of the Drift Formation, we see that here, as well as so often elsewhere, reason is obliged to go further than imagination ventures to follow. These theories it is altogether foreign to my purpose to discuss, and I shall only mention them, as they are necessarily involved in the topic with which we are dealing.

ORIGIN OF THE DRIFT.

It may be considered established that a few thousand, or, perhaps, a few tens of thousands of years ago, the temperature of northern North America suffered a remarkable refrigeration, by which the climate of Greenland was gradually brought down as far south as the Ohio River. There is probable evidence of a considerable elevation of the extreme northern portions of the continent, of the region, say, about Hudson's Bay, a fact which furnishes in part, at least, a producing cause of the change in climate of which I speak. As the conditions of the northern parts of the continent became, successively, like those of Greenland to-day, the order of things which we find in Greenland was reproduced just as far south as the climate of Greenland advanced. Greenland to-day is covered by a continental glacier, the dimensions of which are, at the lowest calculation 700 miles long by 300 miles broad, with a thickness of not less than 2,000 feet. This glacier is advancing with a slow but irresistible motion southwards, towards the open sea, the only direction in which free motion is possible. It scores and scours, it planes and polishes and grooves, the rocky floor that supports it. As its foot reaches and is pushed out into the sea, enormous fragments are, from time to time, broken off, becoming the icebergs which are the terror of northern navigation, and are floated southwards until they meet and are melted by the Gulf Stream.

A continental glacier has lately covered northern North America; has covered Ohio to its southern tiers of counties, at least. It has left its unmistakable track in the polished and striated surfaces of all the firmer rocks of the State. It has left deeper and more ineffaceable marks on the face of the State, in the lake and river valleys which it has so largely helped to fashion. In coming down from the north, it was obliged to traverse the seven times hardened beds of the Canadian Highlands, and upon these its power was comparatively small. Still, it tore countless fragments of these quarled and crystalline rocks away, grinding many to powder, to sand and clay, and leaving as many in the shape of gravel stones and boulders, to be subsequently strewed far and wide over the face of the land to the southward. These pebbles and boulders were afterwards used as instruments of abrasion of the rocks over which they were pushed, and have themselves all been rounded and scratched by the service to which they have been put.

EFFECTS OF GLACIAL ACTION.

But when the great glacier, in its southward advance, struck the rocky floor of Northern Ohio, it found a victim dumb before its shearers. These soft sandstones, limestones

and shales, could not answer back to this rough agent of denudation like the crystalline beds it had already traversed, but they suffered a vast, an immeasurable erosion. Hundreds of feet in thickness must certainly have been stripped away from these rocks and reduced to boulders and gravel and glacial clay.

All the forms of vegetable and animal life with which the continent had hitherto been abundantly tenanted, were exterminated, driven from their accustomed limits, or destroyed by the icy breath of the glacier. Herds of reindeer and musk-oxen roamed over the regions south of the Ohio. They learned the paths to the Salt Licks of Kentucky, and there to-day we find, under the bones of the buffalo—under the bones of the extinct mammoth and mastodon, the relics of these Arctic animals—witnesses whose testimony cannot be impeached to the presence of an Arctic climate there.

At the height of this period, then, we should have found the State of Ohio, over almost its whole extent, covered with a glacial sheet, hundreds or even thousands of feet in thickness, of mingled snow and ice—of the boulders, gravel and mud, into which the face of the country had been ground, in these mills of the gods. This epoch passes, and the great glacier melts and disappears; we do not find it here to-day, but the results of it we see in most of the sand and clay and gravel of the State. The original deposits of the glacial sheet, we often find low down in the drift beds—in the hard-pan, or stubborn, waxy blue clay that lies upon the surface of the polished rock, itself filled with scratched and polished pebbles which were used as the instruments of denudation.

Leaving out of view all the subdivisions of the history, we will regard only one more stage in the Drift formations of Ohio.

It is fully established that, after the events already noted, there was a depression of the surface of northern North America at least 500 feet below its present level. The pendulum swung to the other side of the arc. This period of depression must have been separated from the preceding glacial epoch by a long interval. It may have been, and probably was, gradual in its progress. The stubborn blue clays had been weathered into yellow clays upon their surface, the old deposits were acted on by the advancing waters, and their elements were sorted and rearranged into the sands and gravels and white and yellow clays of the present surface, in part. The continent did not stay beneath the waters; (it is not beneath them now.) Its rising must have been marked by effects altogether similar to those that accompanied its submergence. If we could have seen it after it came up from the waters, we should have looked upon a wide and desolate waste, great reaches of clay as bare as the bed of a millpond exposed by a summer's drought, long ridges and low hills of gravel and sand, the beach accumulations that mark the varying elevations of the waters in the days gone by—all of them, clay, sand and gravel, agreeing in contour with the surface of our beautiful State to-day; but the soil of Ohio is not here. That is yet to be formed, and formed in precisely the same methods that have been already described, by the action of the air on the surface of the earth, and by the progressive accumulation of organic matter.

There is a sense, then, in which all of the soils of Ohio are *native*. All are formed here—formed where we find them. A narrow division of them is made from the rocks which underlie them; but in, by far, the largest portion of the State, the soil is composed of materials ground by the ancient glaciers and floated to their present places by the waters of an icy sea.

GRAVEL SOILS OF SOUTH-WESTERN OHIO.

Examine a gravelly soil of South-western Ohio. In this region the gravel is largely limestone. The same order of facts that a weathering table of limestone will show, can be observed here also, except that all the changes are accelerated. The freer admission

of water and air, the great agents of chemical change, ensures a more rapid rate of decomposition. In such a soil the granitic pebbles remain after the limestone has suffered complete solution. This accounts for the large proportion of these northern pebbles that our drift soils show. The distance to which the changes have penetrated is very distinctly marked, as can often be seen to excellent advantage in a newly opened gravel bank.

CLAY SOILS OF OHIO.

The clay soils of the State have had an even slower rate of growth, because their closely packed particles have excluded to so great a degree the agents of decay. They are never fully developed, indeed, until they come under the hand of intelligent husbandry. Deep-plowing, underdraining, and the incorporation of organic fertilizers, seem essential to a proper exhibition of their value. Cold and stubborn and sterile as they now appear, they are to be counted among the most promising resources of the agriculture of Ohio. They are suffering exhaustion from the system of farming which we now pursue to a less degree than almost any other soils of the State, from the fact that they refuse to make the present system profitable. They hold their treasures safely locked until a wiser system than ours shall find the key. That they really contain, in large measure, the elements of agricultural wealth, there is no room to doubt. Many of you are acquainted with a low lying tract of heavy, white clay lands, extending through the contiguous portions of Warren, Clinton, Clermont, Brown and Highland counties. It is crossed by the Marietta Railroad, in passing from Level Station eastward to Martinsville. Certainly it is an unpromising district, in its present state, as has been found by those who have endeavored to apply to it the same system that has made men rich in spite of themselves in the fruitful valleys of the State. But these sterile tracts are rich to an extraordinary degree in the mineral food of plants. An analysis of the sub-soil of this region, made by Dr. Wormley, for the Geological Survey, shows it to have the following composition:

Water combined.....	5.54
Silicic acid	62.60
Alumina.....	18.90
Sesquioxide of Iron.....	6.30
Manganese	0.20
Phosphate of lime	0.63
Carbonate of lime.....	1.89
Carbonate of magnesia.....	1.82
Potash and soda	2.32
	<hr/>
	100.10

There is scarcely a soil of the State, even among those most celebrated for fertility, that is richer than this Highland county sub-soil, in the essential mineral elements of plant food. Such a chemical constitution, united with a proper physical state, which modern agriculture knows how to confer, will at some future day, make of these "White Oak Swamps" one of the gardens of Ohio.

AGREEMENTS BETWEEN ROCKS AND SOILS IN OHIO.

It has already been shown why, in so large a portion of the State, the underlying rocks affect so little the character of the soil. I will only add that there are, after all, some agreements, in a large way, to be noted between rock and soil.

Ohio has grown, from its earliest history, around an axis or line of uplift, entering the

State from the southward, near Cincinnati, and bearing from thence toward the lake, to the east of north. The various geological formations of the State are for the most part arranged in their out-crops in ribbon-like lines parallel to this main axis. Its earlier growths were made in quiet seas crowded with life, and thus the western or older half of Ohio is a limestone district. Now, as the drift has, in every instance, been moved from the northward, we find that much of the limestone land, particularly in South-western Ohio, is covered with limestone waste, while the sandstones and shales to the eastward sustain a similar relation to the drift beds that cover them. The submergence that followed the glacial epoch mingled and confused to some extent, it is true, these products of denudation, but not so as to entirely obliterate the great lines which I have named.

I have now glanced at some leading points in the geological history of the soils of the State. There is one division of them, however, and that a very important one, which must be referred, it is true, to the same great agencies that have been already invoked, but which would require a separate discussion for the elucidation of the details of its history. I refer to the bottom lands of the State, those most fertile tracts that occupy our river valleys to-day. Upon this subject, I will not now enter.

Permit me, in conclusion, to call your attention more distinctly to one or two points involved in the preceding discussion.

VALUE OF THE SOIL—AS SHOWN BY ITS HISTORY.

1. The soil of Ohio has been formed by an enormous expenditure of force. You will recall the glacial dispensation, when a moving mountain of ice was slowly advancing into Ohio, grinding to powder, to the fine dust of the balance, whatsoever it fell upon, even the firmest rocks of the State. You justly think that we have in these agencies the display of transcendent power, but the soil has been wrought upon by even more potent energy than this. The greatest forces of nature are mainly silent, like Light and Gravitation. "The ocean depths are mute, the shallows roar." Faraday said that more electricity was set free in the chemical decomposition of a single drop of water than a thunder-storm, with all its glare and noise, displays. And so the chemical action of the air, that works so silently on every side, on our right hand though we see it not, and on our left, though we dream not of its presence, melting rock and clay and gravel into soil, is a mightier agent than glacial ice.

2. The soil of Ohio has been brought to its present state by a long extended course of progressive improvement. Like Rome, it was not built in a day. It is a product of years, as really as the giant tree which it bears upon its surface, and of a vastly more extended series of years than the tree requires.

The improvements which it undergoes, consists in the accumulation of the mineral food of plants and of organic matter in its surface portions, and this work can only be done at the expense of time. Many forest growths even, have wrought together to make it thus serviceable to man. The longer it continues in action in a state of nature, the more available resources does it possess. It is possible to so treat it when brought into the service of agriculture, that it shall retain its original fertility, nay, that it shall grow better adapted to man's necessities.

Is it not, then, shameful for one or two heedless or greedy generations to plunder all these slow accumulations of ages and centuries, and transmit a crippled, enfeebled soil to those that shall come after us. The graceless heir often scatters to the winds in a year the fortune which a lifetime of patient industry has accumulated. The system of agriculture that wastes the resources of the soil is guilty of greater folly.

All of us know how men that have suddenly come into possession of great riches sometimes deport themselves. Not satisfied with wasting their substance with riotous

living, they squander it in schemes of wanton prodigality which they themselves are obliged to invent. They seem inspired with the insane desire to find the limit of their fortunes, and unless their years are cut prematurely short, they always succeed.

The pioneers of our country bore themselves in a way somewhat like this, when they came into possession of the virgin soils of the west. They forgot the lessons of economical and careful husbandry which the scanty harvests of the barren Atlantic border had obliged them to learn, and they said to themselves, "to-morrow shall be as this day and much more abundant." They were sure that the soils they were now tilling had in them much goods, laid up for many years, and they pulled down their barns to build greater, but found at last, in failing crops and shrinking harvests, that they had not left the laws of agriculture behind them in their migrations, but were held here and every where to the same imperative necessity of dealing justly with the soil. The sooner the farmers of Ohio come to recognize and put in practice the golden rule of their science viz: to restore to the soil fertilizers the mineral substances abstracted by the crop, the better, and not for themselves alone, but for all who shall come after them. This golden rule is sure to be recognized here, and the soil of Ohio, rescued from every system of spoliation and exhaustion, will be transmitted, not unimpaired, it is true, but still with endless possibilities of service, a priceless legacy to distant generations.

On motion of P. W. Wickerham, of Highland county, nominations were made to fill vacancies in the State Board of Agriculture. The following persons were nominated:

John M. Milliken	Butler county.
W. S. Hickox	Richland county.
L. G. Delano	Ross county.
Wm. B. McClung.....	Franklin county.
R. P. Cannon	Portage county.
J. B. Jamison	Harrison county.
Lewis Evans	Licking county.
Isaac Morton	Guernsey county.
David Brown	Belmont county.
Virgil Moore	Franklin county.
Wm. Lang	Seneca county.
Wm. C. Earl	Lucas county.
B. W. Carlisle	Fairfield county.
Nicholas Ohmer	Montgomery county.
H. J. Miller	Ottawa county.
Wm. D. Hill	Defiance county.
J. S. Robinson.....	Hardin county.
J. R. Kendall.....	Shelby county.
Josiah Koller	Crawford county.
J. M. Daugherty.....	Preble county.
Geo. Anderson.....	Lake county.
J. O. Amos	Monroe county.
Peyton Hord	Marion county.
J. S. Elliott	Coshocton county.
Henry Kirk	Fayette county.

On motion, it was decided to hold the election at 7½ P. M.

The Convention then took a recess until 1½ P. M.

AFTERNOON SESSION.

The Convention re-assembled at 1½ o'clock, P. M., President Lang in the chair. The first business was an address by Col. G. S. Innis, of Columbus, on

THE GAME LAWS OF OHIO.

Mr. President and Members of the Convention—

I appear before you at the request of the Franklin County Farmers' Club to present to you for consideration, their views on the Game Laws of the State as they now appear on our statute books. These laws, and especially the practice under them, as we think, discriminate against the interests of the farming portion of our citizens.

Our lands we hold in fee simple. Most of them are enclosed and more or less improved, though we do not consider this necessary under the present laws of the State. Still we are constantly trespassed upon by would-be hunters during the season of the year. These game laws give any one, by implication, at least, the privilege of killing certain kinds of game.

DAMAGES OF TRESPASSERS.

Because these game laws do not say that persons hunting on the lands of another, without the owner's consent, are trespassers, and they generally knowing little and caring less about the common law of trespass, therefore conclude that these special acts give them the right to kill game at certain seasons, and of course to pursue that game wherever it goes, even into our pastures, where our stock is, into our cattle-yards, where we are feeding steers for the market; into our lots, where our hogs are fattening for the shambles, and into our barn-yards, and sometimes into the house-lot itself.

Under the auspices and encouragement of your honorable Board of Agriculture, farmers generally have made considerable advancement in the improvement of their farm stock.

On almost all farms may now be found crosses with the Percheron or French Norman, and other improved draft horses, as well as most excellent roadsters, or fast trotters, with sometimes a good sprinkling of thoroughbreds. After taking trouble and incurring the expense necessary to procure a number of these improved horses, and having the pride in them, that any one to succeed must have, to discover a lot of overgrown boys or careless men, under the name of hunters, shooting promiscuously and carelessly among them, is enough to provoke the wrath of men having more patience than farmers are generally blessed with. In such cases the herd, however small, is badly frightened, at least, if indeed some of them does not receive an unlucky or stray shot, from some of these would-be Nimrods.

With cattle men the case is no better. Who that has ever fed, even a little bunch of cattle, does not know that one bad scare will take off as much flesh as he can possibly put on in a week with the most careful feeding? And when, as sometimes the case, not only his entire profits for the year, but his living depends on his success with these cattle, it becomes a very serious matter. Which of you gentlemen of the Convention, has not been injured yourselves in this way, or known one of your neighbors to be injured more than all the game was worth, for culinary purposes, that has set foot on your farm for the entire year.

Hog raisers are a little better off, as this kind of stock is not so easily scared as horses or cattle. Still we are excessively annoyed even in this pursuit. Lots where hogs are fed, are generally pretty well strewed with corn. Of course this attracts birds, the birds bring hunters, and the hogs are frightened and perhaps shot. Certainly more food is lost in this way than all the birds would bring, which frequent the lots while our hogs are being fed. I think twenty-five dollars would not compensate me for my yearly loss in this direction.

Our poultry fare still worse. The fact is, near large cities where these hunters do most congregate, where game clubs are formed, we can scarcely keep a turkey, a goose, a chicken or a duck. If they wander only a short distance from the barn-yard, or even go behind the barn, they are bagged by some one with a gun on his shoulder. To lose a turkey or a chicken, some may say is no very serious affair. Still it is very provoking to have one picked off after another till all are gone. So much so, that even the good-natured and gentlemanly President of our club said, that after losing some three-fourths of his flock of turkeys in this way, he became wicked, and watched the remainder for some days with his rifle, determined to take summary vengeance on his persecutors. These depredators on the poultry yard have become so numerous, that many have abandoned the business altogether. The inhabitants of our cities, and especially our city papers, complain that eggs are becoming scarce and high in price, some editors even charging that producers and dealers in eggs and poultry combine to raise the price on the consumers. Protect the industrious in the rewards of their labor, which any civilized State is bound to do, restrain, and not license these plunderers, for their depredations on the barn-yard has more to do in increasing the cost of eggs and poultry generally, than all the combinations of producers and dealers in christendom.

Another important feature of the case is, that these depredators wantonly destroy birds which are most valuable helps to the farmer. Take the partridge or quail, for instance. Where a flock of these birds frequent an orchard or vegetable garden, who can number the insects they destroy? The robin, too, is a great insect destroyer. The same may be said of the redhead yellow hammer, sapsucker, oriole, redbird, jaybird, catbird, and so indefinitely; even the heretofore much despised blackbird, is of great service to the farmer, as an insect destroyer.

It seems, too, as if Providence had provided them for this special service, for in the time of year when insects are most numerous and destructive to our young and rapidly forming fruit, these birds are rearing their young, and consequently need more food than at any other time of the whole year. It is almost incredible, too, what numbers of insects a single pair of these birds destroy in a day, a month, or a year. I think one nest on each apple tree would be almost a perfect protection. I stood last spring, watch in hand, and counted the number of worms a pair of wrens fed their young in twenty-two minutes; the number was twenty-three, or more than one each minute. Still this was early in the morning, and the nest was in the edge of the orchard; but taking this all into consideration, the number they actually destroyed during the season could not be less than 20,000 a month, or most certainly over 100,000 during the season. How short-sighted, not to say wicked, is man to wound, destroy or kill these valuable helps. Cannot we agriculturists have ample protection, for our best friends, the insectivorous birds?

REMEDY PROPOSED.

I may be asked what our club proposed as a remedy. I answer, repeal all game laws now on the statute books, and pass an act recognizing the right of property to every living creature on the farm in the owner thereof, to descend to his legal heirs or representatives. Our club was aware that this would be a most radical change, so far as what

is generally called "wild game" is concerned. Still we think every one must acknowledge its justice. A covey of quails, for instance, never travel very far, unless driven by hunters, seldom off the farm. They eat our corn, as much as they want, as certainly as our hogs; glean our wheat fields, or oat fields, in fact, are hatched and raised upon the farm, as much as our chickens or turkeys, and we have yet to learn of any diminution being made in our taxes, either State, county, township or school district, on account of what ground or space they occupy. As then they are brought to life upon our property, feed and grow upon our grain and wholly at our expense, have we not, in equity, a right of property in them? Certainly, if we have not no other persons can have.

AGRICULTURE A GREAT CIVILIZER.

Here is the great difference between savage and civilized nations. The savage lives by the uncertain means of the chase. His wandering life admits of little or no improvement. As agriculture begins, so commences the improvement of mankind. It has the merit of having raised man from the hopeless state of the savage to the civilized, nay, the enlightened citizen. It is, at once, the foundation and support of all our boasted improvements, in the arts, in the sciences, and in every department of industry, for the amelioration of the condition of the human race.

Agriculture was held by many of the ancient nations in great veneration, so much so, by the Egyptians, that they paid divine honors to the ox on account of his agricultural labors. The more attention agriculture received, the more skilled the husbandman became, the more the nations improved that encouraged and engaged in it. The ancient Greeks and Romans brought it to great perfection. When it commenced to decline the Roman empire declined with it, until finally, after the fall of the empire, agriculture was almost wholly abandoned. Then came on the dark ages in which the most enlightened nations came near returning to the savage state.

IT DEMANDS PROTECTION BY LEGISLATION.

Again as agriculture improved, men became more enlightened. The most successful agricultural nations have made the greatest improvements in modern times. This being the case, it cannot receive too much attention. Our present population cannot exist without it. Then it certainly becomes the first duty of the Ohio legislator, much more of a convention of Ohio agriculturists, to do all in their power not only to foster, but to protect this, the most useful of all arts. Farmers are so scattered or live so far apart, when compared with the inhabitants of the cities, as to make it much more difficult for them to protect themselves from trespassers. We, therefore, claim at least equal protection. In this matter, public opinion is worse than the law. Even that mighty power in the land, the press, is sometimes seriously at fault. They think, or at least they say, that the farmer who objects to any one running where he pleases on his premises, is a churl and call him an "old curmudgeon," and other names of contempt. What would a manufacturer or business man of the city think of an entire stranger, who would come into his place of business and without as much as saying "by your leave, sir," go all over his manufacturing establishment, through his business houses, or into his counting room, and commence turning things upside down, disarranging his books and papers; in the mean time appropriating any little article he could conveniently carry off? If he came across anything he could eat, certainly devouring that, or bagging it and carrying it away for his own use. This is the manner in which the farming community are constantly being treated, for no other reason than that this has been the custom ever since the first settlement of the State. Our possessions, many of them at least, have been so long preyed upon, that many now consider them public plunder. This the press could and should in a great

measure correct. There are some hunters that farmers generally do not object to, at least so far as disturbing our stock is concerned. These are gentlemen (and by the word gentlemen, I mean those that do unto others, as they would in like circumstances, be done by) who come to the house and ask if it would be agreeable to the owner to have him shoot on the farm, and inquire in what fields he would be least likely to disturb the stock. Did we not wish the birds as insect destroyers, no one would object to such men shooting to their heart's content. But there are numberless thieves, that carry a gun and creep into the back part of our orchards to steal fruit, crawl behind our barns and steal chickens or turkeys, and then if caught, pretend to be hunting. Three-fourths of those with a gun on their shoulders are of the latter description. Is it any wonder then, that farmers are inclined to suspect the other fourth as belonging to the same class, unless they first call and tell who they are? Of all the animals, of all the nuisances of the farm, these hunter thieves are the worst.

EQUAL RIGHTS.

All we ask is the exclusive control of our property, the same as the mechanic, the manufacturer and the merchant, have control of what belongs to them. Our lands are as much our own, for we have an inalienable right of inheritance therein, and they never escape the tax gatherer. We must keep up our repairs, and the fertility of our soil. In this we are a kind of manufacturer, converting the coarser articles into animals and then all into human food. No one presumes to come to our stables and take our horses, our carriages, or milk our cows, without our leave, yet they have just as much right to do this, in equity, as they have to run over our farms, tear down our fences or even tramp our grounds, thereby rendering them the less fit for cultivation. Some may say we have a right under the common law to sue for trespass. Trespass is a civil suit and under the exemption laws no damages can be collected from the very class from whom we seek protection.

It seems to our club, that the only practical way is to remove the cause, or excuse honest men have to run over our farms without our consent, and then we can soon take care of the rogues. Give us the exclusive and statute right of what naturally belongs to us, and thereby enable us to protect ourselves from trespassers.

It is unnecessary for me to say much more than I have already said to this convention of agriculturists, on the importance of protecting the great interests of agriculture in our State. Our interests being peculiarly exposed, as our fields are broad, they need the most ample protection the laws are capable of giving. We have no more useful class of citizens than the farmer. Even as a means of national strength they are unsurpassed. Great statesmen have seen and acknowledged this. Brave warriors have not been slow to recognize the same truth. That greatest hero and military genius of modern times—Napoleon Bonaparte, said, "finances founded on a flourishing agriculture can never be destroyed."

PROPOSED AMENDMENT TO THE GAME LAWS.

The following paper on this subject was read:

The suggestions were, on motion, adopted as the sense of the convention.

Josiah Koller, President of the Crawford County Agricultural Society, recommends that the laws for the protection of game be amended as follows: That the several statutes for the protection of birds and game, there be added a supplemental statute to read as follows:

SECTION 1. *Be it enacted by the General Assembly of the State of Ohio, That it shall be unlawful for any person to enter into or upon the premises of another, whether the same be enclosed or unenclosed, for the purpose of hunting, pursuing, catching or killing any wild birds, or game of any kind whatsoever, without the consent of the owner; and every person so offending shall be deemed guilty of a misdemeanor, and upon conviction thereof, shall be fined in any sum not exceeding twenty-five dollars, or be imprisoned in the jail of the county not more than ten days, and shall moreover be liable to the owner of such premises in double the amount of damages sustained by him.*

SEC. 2. All prosecutions under this act shall be by complaint before any court of competent jurisdiction made by the owner or leaser of the premises unlawfully entered.

SEC. 3. This act shall take effect and be in force from and after its passage.

THE WOOL INTEREST.

The following resolutions, offered by L. B. Sprague, of Clark county, were adopted:

Resolved, That the frequent changes heretofore made in the legislation of Congress, upon wool and woolens, have been seriously prejudicial to the interest of wool growers.

Resolved further, That we respectfully and urgently appeal to Congress not to change the existing laws in reference to their interest, until they shall have been fully and fairly tested.

MISSION OF THE AGRICULTURAL PRESS.

Col. S. D. Harris, of Cleveland, corresponding editor of Moore's *Rural New Yorker*, read a paper on the Agricultural Press, of which the following is an extract of its material points:

Having been for the last twenty-two years, without a single exception, a constant attendant upon these annual meetings, and for the same number of years an editor on the Agricultural Press of Ohio, you will not charge me with presumption if I essay to speak to this assembly of the mission of the Agricultural Press, in its relations to other agencies for the support and furtherance of our industrial occupations. * * In nearly a quarter of a century's intimate connection with the press, and close familiarity with the agricultural literature of the age, I have witnessed the rise, propagation, and success or failure, of a host of theories, facts, fancies and schemes, some of which came up like flowers and bore their blushing honors thick upon them to ripen into goodly fruit for the sustenance of the people, or to be nipped by the frosts which take such green things, as they should always do, but sometimes do not. And thus I find myself at times, walking in a grave-yard of agricultural literature amid the tombs of buried fancies, or the carcasses of such as pollute the air for want of burial.

This is the experience of every agricultural editor who has been long enough in the harness to have observed these facts, or who has been a diligent reader of what has been put upon record.

POWER OF THE PRESS.

The agricultural periodical press is the most potent and active agency of our day, in the dissemination of this kind of useful knowledge among men. The active personal sympathy between the editor and his readers gives a fresh zeal to every issue of the paper, and the publication of widely varied correspondence, enlists the co-operation of a

greatly varied style of thought and expression, subjecting the whole to the closest criticism, and to be viewed from all sides according to the observations or the fancies of different people.

The agricultural paper comes at such intervals of time and in such convenient quantity and variety, that it receives immediate attention; the editorial talks, the letters of correspondents, the discussion of farmer's clubs, the reports of trade and even the new advertisements, are all taken in at a few sittings, and the intellectual man is thereby fed and groomed, to go upon the race-course of his duty and lay out his strength to the best advantage. Thus it is that a good agricultural paper is a living and potent thing in every family which puts it to its legitimate uses.

ITS TWO-FOLD MISSION.

The mission of the press is two-fold: 1st, to build up, and 2d to break down. In its work of building up, the editor should be thoroughly informed of the condition and needs of the country in which his readers reside; he must go among them, and see them on their farms, and in their gardens, among their flocks. He must know what they have to do and what obstacles they have to overcome, and the means at their command for overcoming those obstacles. He must be ever ready, by all judicious means in his power to encourage the weak, rouse the strong, and urge more study and intelligence in rural affairs, in both the production of material, and disposal of that production. He must enlist other pens and experiences than his own to keep his paper out of the ruts of any one man's ideas, and so make it an intellectual exchange of the best literary commodities.

As an agency for breaking down, the press has a no less bounden duty to perform. It is neither agreeable, nor pecuniarily profitable for the honest editor to encounter the prejudices of the sincere or the selfish schemes of the dishonest. To a man who seeks his ease or his popularity, it is more agreeable to drift with the tide, and more profitable to smile with complacency and bow the knee where thrift follows fawning.

There are thousands of idle or weak or ill balanced minds which are seeking out new inventions—honest it may be but visionary and impracticable. I know how hard it is to deny such people the gratification of appearing in print. They fondly dream that they have a thing which will revolutionize the world, and they cling to their bantling as fondly as a mother clings to her idiot child, and the editor must inherit the fond author's ill-will by telling him to take his embryotic prodigy, roll it up tenderly and lay it away in lavender till the world is wise enough for its advent!

There are lots of geniuses who will say that such an editor blocks the way to progress, and they wish somebody would start another paper to show him up and to lead the way to an agricultural millenium!

The office of the Iconoclast is no sinecure; his work at best but a thankless task—oftenest its compensation is only the life long enmity of the deluded or dishonest, with but an indifferent appreciation from those who are most benefited by his work. But it is none the less his mission, to take the hammer and break in pieces images of a false and fond idolatry, to save the worshippers from the consequences of their own amiable delusions, and to save other people from going after them.

The speaker then proceeded to run a friendly parallel between the Press and other agencies for the collection and diffusion of useful knowledge, in which he instanced the Farmer's Club of the American Institute, and the Cincinnati Horticultural Society, whose discussions were carried out on the manifold leaves of the press, by hundreds of thous-

ands. The Smithsonian Institute and the National Department of Agriculture at Washington, were spoken of as carried on at large expense to the public, with a very considerable comparative return for the outlay, and far below the legitimate influence of the independent Agricultural Press.

Allusion was made to the endowment of Agricultural Colleges, in which the speaker went on to say: Let us suppose, for the sake of argument, that this endowment had been extended to the support of a good Agricultural paper in each state—not to make it a gift concern, like the government seed store at Washington, but rendering it such assistance as to place it above the necessity of depending upon its advertising patronage for its revenues. Its editors and contributors could be suitably paid for their services, and the best talent of the country could be enlisted for the diffusion of the best intelligence at their command. Allow for this paper, in Ohio, the moderate estimate of 50,000 copies weekly, for the 400,000 rural families of the State; and allowing four readers to each family thus supplied with the paper, would give an aggregate of 200,000 readers. This paper goes to that number of readers every week of the year, full freighted with intelligence upon all the varied interests of their occupations; and there, at their own firesides or upon their farms or in their shops, under all the social and domestic influences of home and society, they drink of that fountain and grow up into that knowledge at a small cost, less inconvenience and no separation. Who shall estimate the difference in result between such a far-reaching and inexpensive agency as this, and that of the Agricultural College upon its two hundred students, under the most favorable auspices? Two hundred against two hundred thousand! The larger number educated on the farm, amid all the binding influences of home, and in the daily practice of its health-giving and instructive labors—the lesser number sent away from home, to be educated *off* from the farm, and most likely to *stay off thereafter*; their domestic habits broken up, their systematic rounds of industry laid aside; entering into new associations and filled with new ambitions.

I leave you to strike a balance between the extent, cost and results of these two agencies for Agricultural education.

Do you ask me if I would desire or admire or advise such an endowment of the Agricultural Press? I answer—no. It is contrary to the genius of the American mind and the spirit of American institutions, which teach independence and self-reliance, as the cardinal doctrines of the Republic. In the prosecution of their business the conductors of the press have laid a foundation which is safer and better than to depend upon the patronage of the State.

Just now I was speaking of the difference between the number of persons who could be reached by the newspaper, and those who could be gathered into a college. It is easy to say a thousand; but does the hearing of that word convey an idea of its magnitude?

Here in this room we have an audience of some seventy delegates, with about the same number of lookers-on; and we call this a goodly assemblage, and so it is. Two hundred to three hundred persons is a fair-sized congregation in our churches; two thousand to five thousand is a good attendance at a county fair; twenty thousand to thirty thousand are among the largest gatherings at our State Fairs, packing an area of thirty or forty acres.

Our large circulating weekly Agricultural papers, issue editions of thirty to one hundred thousand. Allowing the usual number of readers to each family, and we have a weekly audience of from one hundred and fifty thousand to five hundred thousand readers!

Who shall estimate the forces of such an agency, or measure the responsibilities of the persons who wield these forces.

To-day I stand in the Capitol of Ohio speaking to an audience of two hundred people that which I may write on to-morrow, of the transactions of this convention, or of other matters, will go out upon the leaves of the Press to the homes of half a million of people, from the Atlantic to the Pacific—across the ocean to the kingdoms and states of the old world, and the far off islands of the sea!

If I have seemed to magnify the reach and mission of the Press and assigned to it a place above others, I have also shown you by facts and figures that we have justly earned that high position, by the intelligent energy with which we have pushed our conquests into the highways and byways of the world, and sent the gospel of labor and the evangel of peace to greet the people at their own homes, and to throw around them the bonds of a common fraternity, and to endow them with the franchises of a noble independence.

In the pursuit of this occupation we ask for no endowments or special legislation from the State, but only a fair and open field in which to sow our seed and reap our harvests, amongst the competing business of the world.

Hon. D. C. Richmond then addressed the convention upon the

DETERIORATION OF SOILS.

Mr. President and Gentlemen of the Convention: The rapid deterioration of the soil in Ohio, by excessive cropping, is a subject well worth the attention, not only of the agriculturist, but of every other class of citizens in the State.

If we continue this bad system of continually cropping the land without any return, we are quite sure that the result will be seen at no distant day, and the looks of our poor fields will tell us in a language too plain to be misunderstood that they have lost their fertility, which was once the pride of the farm and the boast of the citizens of Ohio.

Providence has given us a very rich soil with a favorable location. The great question is: **HOW SHALL WE RETAIN THE FERTILITY OF OUR SOIL?**

In regard to this matter, I think we should look to the older countries, and profit by their experience.

I will endeavor to give you some practical illustrations, derived from the agriculture of foreign countries.

EXAMPLES OF FERTILITY IN OLDER COUNTRIES—CHINA.

There is abundant evidence that a country can maintain its fertility, from its own sources. For instance, China, which is the best cultivated country in the world, has naturally a very poor soil, with many of the hill-sides covered with a poor yellow hard pan, the waters of the sea which wash its coast exhibiting a poor yellow clay color. This country, by the untiring industry of the people, retains its fertility from its own resources, supports its immense population of over 400,000,000, and has continued to do this for at least many centuries, and perhaps thousands of years. The Chinese grow no weeds, save and use everything that can possibly make manure, and apply it to the land to the best advantage. Nothing is wasted in that country. Very few domestic animals are kept, consequently they have to look to other resources for manure, and human excrement is mostly depended on as a fertilizer. We could learn some valuable lessons from them in the preparation and application of manure. The principle of the earth closets, now just coming into use in this country, has been in use there probably for centuries.

Belgium is the best cultivated country in Europe. The land has been under cultivation over one thousand years, yet the fertility of the soil is kept up from her own resources, and grows fifty bushels of wheat per acre, with other crops in proportion.

The utmost economy is practiced in that country. The wind grinds the grain, the girls and dogs take the crop to market in little wagons; women are often seen plowing with a team of fine looking cows that appear to be strong, walk fast, and do their work well.

I was in that country about harvest time, and looked at those splendid fields of grain with wonder and astonishment. The fields of Waterloo and the surrounding country is one of the most productive and beautiful sections of land in Europe. I had a great curiosity to know how they kept up the fertility of their soil in that old country.

ECONOMY IN THE USE OF MANURE.

The matter was soon explained by the many manure heaps to be seen. Having no fences, they keep all their stock in the stable, and take good care of their manure. The manure heap is so constructed that the liquid runs into a tight vat underneath, and is put on the heap again, or drawn directly to the field. The great secret, in the management of their manure, is to prevent fermentation; they haul the manure often to the field, plowing it directly in, especially during warm weather, believing that the land will thus receive the most benefit. They sometimes move the grain shocks, before they are dry, to plow in the manure.

This is a great grain growing district, and the large crop of straw is mostly put in the manure heap. Considerable lime and other manures are used.

ENGLAND.

We can view the agriculture of England with advantages. About one hundred years ago wheat only averaged ten bushels per acre in England. At the present time the average is thirty-six bushels per acre. Fifty and sixty bushels are often grown.

The rapid increase of population in that country, owing to the great manufacturing and commercial interests, has greatly stimulated the raising of agricultural productions, and made Liverpool the first commercial port in the world. Many of her ships bring home as return cargoes from distant foreign lands the best kinds of fertilizers. The result has been a state of high cultivation and liberal manuring, with a corresponding increase of agricultural productions.

USE OF BONE AND OTHER FERTILIZERS.

Immense heaps of bones are often seen on the Liverpool docks. I saw some brought from the Crimean battle fields, a portion of it said to be human bones, but which they said made an equally good fertilizer. Bones are considered by them a valuable fertilizer. England uses 86,000 tons of ground bones per year.

New sources of manure are continually being brought to light, of which England avails herself at once.

Cargoes of phosphate are now being shipped to England from the newly discovered beds in South Carolina. Little did I think in 1834, when sailing past the Island of Tristan d'Acuna, near the Cape of Good Hope, with its immense flocks of sea-birds—the home of the Albatross, that in a few years a fleet of ships, with sealed orders (not to be opened until south of the line,) with orders to take all the bird dung to England. That, however, was the fact. This was the first commencement of the guano trade, which of late years has become of so much importance. England now uses per year 210,000 tons guano. The quick, warm nature of this manure is of great value in that damp, humid climate.

We Americans can learn a lesson from English agriculture; that liberal manuring and high cultivation pays; and the sooner we find out this fact the better for our country.

SOUTHERN EUROPE.

In southern Europe, the once fertile plains of Lombardy, and the former pride of Italy, by cutting off the forest, and continually cropping the land, now yields scarcely any return. Much of this beautiful, fertile land is now almost a barren waste, and the land which is cultivated scarcely pays the expense of cultivation. Two hundred years ago, when this country was one of the most productive portions of Europe, and the great city of Venice, the shipping port of this country, with its canals and gondolas, was the wonder of the world and the pride of its citizens, its foreign shipping and business was immense.

When in that city a few years ago I could see only two foreign brigs, a few small coasting vessels, two Austrian steamers, with not a ship in the harbor. Silence reigned in the city, the lazy Italian, Turk and Greek only to be seen. No building or improvements going on. This would be the fate of our lake and river harbors in Ohio if the soil of our country was not productive.

RUINOUS SYSTEM OF FARMING IN THE UNITED STATES.

The effects of a bad system of farming can be seen all over the United States. The cotton system of the south is the worst. A very few years with this crop wears out the upland. Twelve years continual cultivation of wheat in the rich new lands of Wisconsin will reduce the yield to ten or twelve bushels per acre.

The great State of Ohio has in some past years had to import wheat for her own consumption. Many counties now produce little wheat. I have good authority for stating that in the Miami valley lands which formerly produced eighty bushels of corn now grow only forty bushels per acre.

The New England States grow only one-sixtieth the grain they consume, and the great State of New York grows less grain than she consumes. Ohio corn is retailing in Connecticut at one dollar per bushel this winter. I have produced abundant evidences that some foreign countries keep up the fertility of their soil, and will prove that it can be done in this country, too.

AGRICULTURE OF NEW ENGLAND.

In regard to our own country, the soil of some of the New England States had become so exhausted, that little wheat could be grown before my remembrance. Corn, rye and oats were cultivated to a limited extent. In Massachusetts and Rhode Island, which were first settled, the wheat crop first failed, then the corn and oats, so that they ceased to become paying crops about 1820. The inhabitants then turned their attention to commerce and manufactures, drawing their supplies of corn and rye principally from western Connecticut.

When I was a boy there was a large grain trade carried on with Boston and Providence from this section. The land was, during this period, cropped to its utmost extent and soon exhausted, and the inhabitants of Connecticut, like those of Massachusetts and Rhode Island, turned their attention to commerce and manufactures.

Upon the opening of the Erie canal in 1825, wheat and other grain was brought in, and sold very cheap, from the then rich lands of western New York. At this period scarcely any grain crops paid the expenses of cultivation, and very little was grown in the New England States.

The result was that very little was done with the lands, and for a long time farming continued a poor business. So poor was the land in some portions of Connecticut that it was said that a grasshopper would crawl up a mullein stalk and look over a forty acre lot for something to eat, with tears in his eyes.

Our Eastern States are doing now what England commenced fifty years ago; to import manure, save and make all they can at home, and apply it to the best advantage, and are putting more labor and capital on the land. This course will always result in a corresponding increase of the agricultural productions of a country.

I will give some figures in relation to Connecticut, which I know to be correct. They refer to a strip of land some six miles long and three miles wide, up Long Island sound, in a section of country ranking as among the best land in the State. The following is a reliable statement of the amount and costs of manures used there last year:

Old leached ashes, 7,500 bushels, at 25 cents per bushel.....	\$1,875 00
Ground bones, 200 tons, at \$35 per ton.....	7,000 00
Super-phosphate of lime, 125 tons, at \$50 per ton.....	6,250 00
Guano, 10 tons, at \$50 per ton.....	500 00
Sea weed, 10,000 loads, at \$1 per load.....	10,000 00
Salt hay, 3,000 tons, at \$10 per ton.....	30,000 00
Barn-yard and other manures.....	20,000 00
Total	\$75,000 00

I inquired of several gentlemen if this high manuring paid. The answer was: "The man that buys the most manure makes the most money. We have either to buy manure or move west. We cannot farm it here without manure."

Under this system the price of land is rising, so that farm lands there are now worth from \$200 to \$500 per acre. The yield per acre of any one of the given products is about as follows: Onions, 900 bushels; potatoes, 400 bushels; strawberries, from 200 to 300 bushels; wheat, 40 bushels; corn, 100 bushels; hay, 5 tons; and other crops in proportion. One hundred and thirty thousand bushels of onions were shipped in one season to New York.

It would benefit some of our farmers to visit Connecticut and observe the farm management in that State. We could learn a good lesson in the method of making, care and management of manure. Instead of wasting their barn-yard manures, as we do at the west, they double it in quantity and value, by composting it with the refuse of the farm. Everything is saved which will make manure, and the quantity they make from a small farm would surprise a western farmer. Some of the farms of this State are under quite as high cultivation and as well managed as many of the best farms of Europe.

The important question may again be asked: "Will this pay in common farming, or with common farm crops?" I answer: "Yes, with all crops. Poor farming will starve any man." There are no people in this country who better understand the method of making money, and keeping it, too, than the inhabitants of Connecticut. They understand agricultural chemistry, use a large amount of special manures, and produce wonderful results in the large crops grown.

AGRICULTURE OF OHIO.

Experience has proved that it is the inevitable destiny of all new countries like Ohio, with a rich virgin soil, to have the land worn out by continual cropping, no pains being

taken to renovate it, until the crops will no longer pay for cultivation. Then the first settlers sell out and go west.

We are in duty bound to transmit unimpaired this rich inheritance to posterity. How shall we do this? is a question easily asked but not so easily answered. When the great railway trains are bearing away the richness of our soil in grain, cattle, etc., and numerous steamers and other vessels leaving our ports, laden with the produce of our State, for distant markets, never to be returned. Besides, our great and small rivers are continually carrying away the richest portions of the soil, which are lost. Worse than all this, our people are wasting the manure by permitting the ammonia to escape to poison the atmosphere, while some of its most valuable properties are washed away, by heavy rains, to pollute the neighboring streams.

It is a fact that one-third of our barn-yard manure is often wasted in this way. No civilized nation under the sun is so wasteful of its fertilizing resources as the American people, and especially the farmers of Ohio.

And then again there is an almost entire neglect of the rotation of crops on many farms, and a continual cropping of the land with corn, and not feeding, but selling it to the distillers—a practice so detrimental to the farmers and the best interests of our State.

Much of the prosperity of the State is due to the great fertility of our soil, which we are wasting with far greater rapidity than most people suppose. There is much land already in our State so poor that the crop will scarcely pay the expense of cultivation. Here is a great question which not only interests the farmer, but all classes of society, for all eat bread, and are directly interested in the great agricultural interests of our State.

FERTILIZERS.

The fish guano manufactured at Sandusky, a quick, rich fertilizer, which should be used by every farmer, is all sent east. We should also use more gypsum on our lands, and ashes, especially the old leached ashes, which are found in some sections of our State, are quite valuable as a fertilizer. Saltpetre, potash, ammonia, sulphur, and many other minerals, are valuable fertilizers.

It is expected that the geological survey of our State, especially the agricultural portion of it, will develop much valuable information in regard to the soil. At the present we must depend mostly on barn-yard and stable manure. It is not best to let stable manure undergo fermentation, unless composted with some coarse material to absorb the gas. Better haul it out and spread it on the field, as the land will get the full benefit of it then.

The compost heap is of the first importance, though much neglected in this State. It can be made at any time, though best done in warm weather. Use a little fish offal or manure, then straw, old hay, leaves, weeds, turf, or almost anything else, keeping up a proper fermentation and you will have a good manure heap at little expense. Much good manure can generally be bought in towns and cities. This opportunity should not be neglected.

Can we keep up the fertility of our soil? I answer yes, and steadily improve it too. I know this by my own experience, and have seen it done by some other farmers of our country. I suppose the same thing can be seen in all sections of Ohio. But where there is one farmer of our State improving his land, there are at least one hundred others more or less rapidly wasting the fertility of their soil.

The great improvements in agricultural chemistry, at the present day, by means of

which we can sit down and study out every important element necessary for the production of all the crops we grow, is a great triumph in agricultural science. This subject has not been investigated much by our western farmers. It demands the careful study of every farmer of Ohio. Encourage the manufacturer and try those special manures which have produced such wonderful results in the Eastern States.

We all know that most of the refuse bones are collected and sent out of the State, and ground and used as a manure. They are a valuable fertilizer and should be used in the State.

Gypsum (plaster) sown in the spring on wheat, clover and grass, when they have grown a few inches, also a small amount put on corn, potatoes, etc., is perhaps the best manure we can use on all high limestone land, sandy and other high dry lands. The effect is not so marked on low lands. From sixty to one hundred pounds per acre are generally sown.

Clover is also one of our best and cheapest fertilizers, in connection with plaster, on high uplands. Its long tap root penetrating deep into the soil, renders it light and loose, drawing much of its sustenance from the atmosphere.

ROTATION OF CROPS.

The proper rotation of crops is a very important consideration in keeping up the fertility of the soil, and is well worth the study of our farmers. The system which I have practiced for several years is to plow an old meadow or pasture in the spring, plant it with corn or potatoes two years, sowing to barley the third spring, with wheat put on the land in the fall, the fourth spring I seed down with one-half clover and one-half timothy. Then, after mowing it three years, pasture it two seasons. This method gives me the best satisfaction of any that I ever practiced.

UNDERDRAINING, ETC.

Underdraining, where the land is wet, or even on high clay land, is of far greater consequence in keeping up the fertility of the soil than many people suppose. It entirely changes the nature of the soil, by removing the stagnant waters, allowing the roots to go deeper in search of food. The effect is almost like making it new land.

Deep plowing, as a means of fertilizing the land, is of much importance. If the land is a deep black soil, double plowing will be of much advantage.

A grazing country has great advantages over any other in keeping up the fertility of the soil. We should keep all the stock on the farm possible; not selling off the hay or straw, but using it to make manure, and taking good care of it.

Plowing over the sod, especially a clover sod, adds several tons of vegetable matter per acre to the soil.

This is a very interesting subject, but time and space forbids any further remarks.

Dr. J. A. Warder next delivered an address of considerable length—of which the following is a very full abstract—upon the subject of

TIMBER PLANTING.

Gentlemen of the Agricultural Convention of Ohio: It is indeed high time that we should begin to estimate the true value of a proper proportion of timber land in every agricultural country. Either an excess of forests or their entire absence produces the uninhabit-

able wilderness. The one shuts out civilization by its denseness, while the vast plains must long remain unpeopled because of the vast extent of open lands, destitute of timber for man's necessary uses and shelter.

The Steppes of Tartary, the great deserts of Africa, Llanos of South America, resemble the grass of our western plains in many respects, and all of them must ever remain in their present condition of unfruitfulness, occupied only by herdsmen, or by wild animals, until the conditions which render them desert may possibly be changed by man's ingenuity.

On the other hand, the densely timbered region can support but a sparse population, which must be dependent upon the chase for its support—and barbarous. Northern Europe was for a long period in this condition. The whole of northern Germany, France and Britain was in a state of semi-barbarism when subdued by the Romans. Tacitus and other writers inform us that timber lands then covered the most of these countries, and that their climate was wet, cold and inhospitable, where now the grasses, grains, and even the vine flourish—changes of climate have accompanied civilization. But we must not carry the process too far, lest we reach the other extreme, as has already been done in some countries, and as we are already in danger of doing in some parts of our own country. We may here learn a lesson from the Chinese. With an exceedingly dense population, where every foot of land is made to yield something for the support of human life, the necessity for the presence of trees is fully recognized, and we learn that, although there be no forests, trees everywhere abound and are carefully protected, scrupulously preserved for their well-known effects in modifying the effects of the winds.

RESULTS OF TIMBER DESTRUCTION.

In Italy the clearing of the Apennines is believed to have seriously altered the climate of the Po valley, and now the African Sirocco, unknown to the armies of Rome, breathes its hot, blighting breath over the right bank of that river in the territory of Parma. The similar removal of the pine forests near Ravenna, about twenty miles long, induced the same desolating wind, which continued until the wood was allowed to grow again. There is no doubt that in France the removal of the old forests of the Vosges sensibly deteriorated the climate on the plains of Alsace, and it is a historic fact that the ancient destruction of the forests of Cevenne, under the reign of Augustus, left the large and rich tracts near the mouth of the Rhone exposed to the steady violence of the *mistral* or northwest wind, before which the area of olive culture has retreated many leagues, the orange is confined to a few sheltered points on the coast, and fruit trees can hardly be reared in places where they were once formerly prolific.

The curtailment of the rainfall is a well-known consequence of the disappearance of forests, and the reverse is equally true; in Egypt, where, during the French occupation in 1798, not a drop of rain fell for sixteen months, and from time immemorial the country has been a rainless bed of sand, Mehamet Ali, by planting his millions of figs and orange trees, has since seen his country blessed with an annual rainfall of several inches.

Large tracts of land in southern France, which were once fertile and populous, and the scenes of busy commerce, after being cleared of their timber became desert wastes. The history of this region, known as Leds Landes, is full of instruction for us in some parts of America. The whole country had become a succession of sand dunes and marshes that were uninhabitable. At length the government interfered with the destructive agencies of nature, let loose by man to desolate the land, and by wise and persevering efforts in tree planting she has restored the desert to a condition of productiveness.

We may find another valuable lesson in the present deplorable condition of Persia, once so populous: "The accounts of the famine in Persia bid fair to treat the world to the spectacle of a calamity the like of which has not been witnessed, in historic times, at least—the sudden extinction of a nation for want of food. This has really been the fate of the great states which once filled the valley of the Euphrates, and it is a fate which has, for centuries, been threatening some modern states—Spain, for instance. Man has stripped the soil of trees; the absence of trees has brought drouths; drouths have slowly diminished the productive powers of the soil, and finally destroyed them, the population in the meantime diminishing in numbers and vitality. Spain had forty millions inhabitants in the time of the Romans, and flowed with milk and honey; it is now a wild region, only half of it under cultivation, with but sixteen millions of people, and if modern science had not come to its aid would probably go the way of Babylon. Persia was one of the most powerful states of antiquity, and in the fourteenth century was able to support the army of Tamerlane, who marched without commissaries or baggage during a bloody contest. It is now almost a wilderness, with a population of two millions—about half of them nomads, which are rapidly perishing from famine brought on by three years' drouth." * * The editor of the *Nation* then adds: "It is to be hoped that we shall witness before long some organized attempt in this country to deal with this momentous question of forest preservation, which is daily becoming more pressing."

THE NECESSITY.

No well informed person can doubt the *necessity* of timber land in any country. Timber is needed for supplying our wants—the trees are required for sheltering ourselves, our crops and our cattle, and for their happy influence upon the humidity of the climate, and the consequent continuous supply of water. What is the proper proportion, is a question of importance. Great Britain has but one twenty-eighth, which may be enough with her insular climate, and she draws her supplies of lumber from abroad. Spain, with a more torrid clime, has but one-twentieth, and suffers from the lack. Portions of Europe have one-fifth of their area covered with forest. Some foresters of Europe advise one-third of the territory to be occupied with timber plantations. In Prussia the forests are carefully maintained by the government, and it appears that the annual appropriation in 1870 was \$1,671,704, while the increase from the same source is reported to have been more than nine millions of dollars. How different in our own country, where destruction is the motto rather than preservation!

It has been asserted by those who have been observing the effects of shelter belts where they have been planted to some extent in Illinois, that were one-fifth of the land so occupied, the remainder will produce more than the whole farm would have done if open and exposed to the winds. Bryant recommends thirty acres to each quarter section, (160 acres,) which is rather less than one-fifth. This author declares that the climate of Illinois is already less windy than when he settled there, forty years ago. This he attributes to the buildings, fences, orchards, and scattered trees that have made their appearance on the broad prairies in that period. He says: "If a few obstacles have a perceptible influence in this respect, there is good reason to suppose that a general planting of groves and belts of timber would essentially modify the climate."

In the year 1846 Mr. George B. Emerson made a report to the Legislature of Massachusetts, upon the trees and shrubs of that State, in which he prophesied that in a quarter of a century, the forests of Maine and New York, from which they were then drawing their supplies would, in many places, be cut off. How surely has this prophecy been realized, let the once famous forests of Maine and New York now answer! The majestic

trees are gone from vast tracts—only the inaccessible remain clinging to the soil in unapproachable ravines and mountain crests.

Col. J. W. Foster in his delightful book on the Valley of the Mississippi, refers to this destruction of our forests when he says the timber trees of Maine * * * are nearly exhausted, and twenty years will accomplish the same result with regard to the fine lands of Michigan and Wisconsin, where the destruction of hard-wood timber is going on with equal rapidity. To one who realizes how rapidly the sources of supply are being exhausted, it cannot but be disheartening. The Pacific railroads which traverse for long distances the valleys of the Kaw and the Platte, have consumed, in their construction, almost every stick of timber, and in four years will consume all the fire-wood.

RESTORATION.

Massachusetts has already demonstrated the feasibility of tree-planting for profit, Illinois has done the same thing upon her prairies—it has also been done in Ohio, as will be shown—the example is contagious—new planters in all of these and other States are wheeling into line, while our younger sisters, Kansas and Nebraska, have eclipsed us already in the vastness of individual enterprises of this kind which they have begun. This is well; for truly, it is high time we were beginning to replace what has been so wantonly destroyed; having wasted our patrimony of trees, the growth of centuries, we should endeavor to leave something for the benefit of our children. But the result is not always so far off. It will be shown that timber may be planted for profit, and that the money returns are eminently satisfactory from the investment, and that they may be realized in a comparatively brief period—in a single generation.

We cannot any longer pursue the pioneer course of flying to new lands for supplies when the resources of the old are exhausted. The pines and walnuts, poplars and oaks, the result of centuries of quiet and undisturbed growth, are rapidly disappearing before the greed of man, and we have no more forests that are accessible. The vast amount of public domain this side of Oregon is nearly destitute of timber land. The United States census gives the proportion of timber to open lands on the public domain as only one to twenty. Much of what is marked upon the maps as "heavy timber" is really open and park-like.

In the rocky mountains, as in the famous pine regions of Michigan and Wisconsin, destructive fires are rivaling the ax in the work of annihilation—they have spread over vast areas, sweeping all before them. In a single generation at this rate, there must be a great scarcity of timber, and yet as a people, we are making no provision for the future—we are doing nothing to compensate for their destruction.

RATE OF DESTRUCTION.

Those who have witnessed only the slow progress of the pioneer settlers in a new country, laboriously cutting out a farm from the forest, spending a lifetime of toil in reclaiming a few fields and opening them to the sunshine and to the plow, can scarcely realize the vast amount of destruction of timber which is constantly going on in the aggregate labors of the country, especially in supplying the demands of modern civilization; its building manufactures and railroads. This reaches the enormous extent of two millions acres annually.

Those who are not connected with the management of railroads, can have no idea of the immense drain they make upon the timber lands of the country. There are about 50,000 miles of such roads in the United States, and this is but the beginning. Every mile requires 2,700 cross-ties; these are worth an average of fifty cents. They are often

made of comparatively small and young trees that furnish from two to three pieces each, so that the number of trees required to furnish a single set of ties will be more than four millions. Allowing 300 trees to the acre, which is too liberal an estimate, it will require 13,333 acres to furnish one set of cross ties—but it were safer to allow 15,000 acres to be stripped for this purpose alone every eight years. The bridges, cars, and platforms will also require an immense amount of timber.

Besides this there is a constant demand for fuel by the locomotives, and though many of the roads consume coal, a vast amount of wood is still required. The railways of Ohio alone consume nine millions of cords. It will be safe to say that ninety to one hundred thousand acres will be required to keep these engines supplied each year.

In his portion of the geological report of Ohio, Mr. Klippart has constructed tables for the Maumee Valley, embracing eighteen counties in the northwestern quarter of the State showing the area of forest in 1853 and 1870, from which it appears that the amount of land cleared in these 17 years is 847,911 acres, or nearly 50,000 acres each year. At this rate it will require but half a century to destroy the whole of these forests, supposing that the increasing population already 49 to the square mile, be no more wasteful of their great legacy of forest; this, however, can scarcely be expected. The drainage of these fertile lands accelerates the clearing, and more lands will be cleared annually until in all this valley the proportion of forests will be reduced to the minimum.

RATE OF GROWTH.

Having at some length discussed the rate of destruction of our forests, which, indeed, presents a gloomy picture for the future supply of this important material; let us now look at the more cheerful prospects presented by an examination and careful measurement of the trees in the plantations that have already been made by the enterprising pioneers in this new industry.

Among the trees that are most valuable, there is quite a difference in the rate of growth, and among those most desirable in the arts, such as Black Walnut, the Oak, the Cherry, the Tulip, Ash, Beech and Pines, a century or more is required to perfect the trees, and to produce the most valuable logs, two, three and often more centuries are needed.

In the forests of Ohio and Indiana the famous logs of the Tulip and Black Walnut often have three and four hundred rings of annual growth. Near Terre Haute, Indiana, a log five feet in diameter contained 390 rings without counting the heart which was decayed for some inches. Mr. John Lush, near Rockville, Indiana, counted 400 rings in Poplar logs. Mr. Ayres, of Champaign county, Ohio, found a Tulip Poplar that was seventy feet to the limbs—this tree must have been five hundred years old.

Taking these dates, notwithstanding the great value of the lumber in such trees, it is hardly safe to recommend the exclusive, or even the extensive planting of Walnuts and Poplars, with a view to profit, because few such trees would be produced to the acre, and the accumulating interest of centuries, even upon a small investment, would leave absolutely no margin for profit. For their beauty as well as for their value, all kinds of trees should be planted, and we should be willing to do something for posterity, but when we set about planting timber for profit, we must be able to make a better showing, and to point to some results that will not only be satisfactory in amount, but which may also be realized within a reasonable time. This will be done promptly. Meanwhile a few results of absolute measurements will be given for your encouragement. Near Terre Haute, Indiana: .

Catalpa, 15 years planted, 21 inches in diameter.

Ailanthus, 24 " " 22 " "

Tulip Poplar, 23 years, 21½ " "

Sassafras, 40 years planted, 22 inches in diameter.

Cottonwood, 42 years, 40 " "

Red Oak, 50 years, 43 " "

Black Walnut, 15 years, 14 " "

White Pine, 19 years, 13½ " "

Chestnut, 17 years, 17½ " "

Black Locust, 38 years, 32 " "

At Springfield, Ohio, trees planted 1851, standing in blue-grass sod clay soil :

European Larch, 20 years, 10½ inches in diameter.

Paper Birch, 20 years, 10½ " "

Red Cedar, 20 years, 9½ " "

White Elm, 20 years, 14½ " "

White Pine, 20 years, 14½ " "

Norway Spruce, 20 years, 14 " "

Austrian Pine, 20 years, 15 " "

Ailanthus, 20 years, 15 " "

Burr Oak, 20 years, 15 " "

Silver Poplar, 20 years, 17½ " "

Others in cultivated ground and more friable soil, but of same age :

European Larch, 18 inches in diameter.

White Pine, 14 " "

Paper Birch, 14½ " "

Deciduous Cypress, 20 " "

The above larch would make three cross ties.

On the river hills near Cincinnati, a *Black Locust* of 17 years' growth, measured 14 inches diameter, another of the same age was 23 inches in diameter. A *Catalpa*, 16 years from the seed, was 19 inches in diameter.

Mr. Bryant, in his book on Forestry, gives the following measurements from Mr. Schofield, Elgin, Illinois. Trees planted on upland prairie, 12 years ago :

	Diameter.	Height in feet.
European Larch.....	8—12 inches	30
American Larch.....	4—6	25
White Ash.....	3—5	16
Silver Maple.....	4—6	25
Sugar Maple.....	2—4	12
Black Walnut.....	2—4	14
Chestnut.....	3—4	16
White Elm.....	3—4	16
Scotch Elm.....	3—4	16
European Birch.....	4—6	14
European Beech.....	2—4	10
White Pine.....	6—10	35
Austrian Pine.....	5—7	16
Balsam Fir.....	4—6	16
Scotch Pine.....	4—8	20
Norway Spruce.....	5—8	20

SHALL WE PLANT TIMBER?

In some countries of Europe the government appoints officers whose duty it is to inspect the forests and to indicate what trees may be cut. Schools of forestry have been established, where youths are taught the management of timber plantations, and everything connected therewith, from the nursery of seedlings to the matured forest of noble trees. May we not hope that in the great schools of the NEW EDUCATION now springing up in the several States, this important subject will claim and receive its full share of attention! All travelers tell us of the artificial forests of Europe. The extensive plantations of the Duke of Athol, have fully demonstrated the practicability of timber growing on the rugged heights of Scotland, while the marshes of Holland reclaimed from the ocean, now have their willows, and the sandy beaches of the Netherlands have been made to produce extensive forests of pines. The following estimates were prepared by a gentleman who had a hundred acres of nearly valueless land in eastern Massachusetts. It was a continual tax bill and brought no return whatever, though valued at fifty dollars an acre. The interest for twenty years would be \$6,000, the taxes \$5,000. There was a fence around the lot, and he estimated that it would cost twenty dollars a year to keep it up. Each acre would hold 500 trees, 50,000 in all. First cost for plants, \$1,500. Planting would cost \$600. The trees, at the present price of ties and posts, would be worth at least seventy-five cents each.

To sum up.	DR.
To Interest.....	\$6,000
“ Taxes	5,000
“ Fencing.....	400
“ Oversight, \$50 per year	1,000
“ 50,000 trees	1,500
“ Planting	600
Total.....	<u>\$14,500</u>
	CR.
By 50,000 trees, at 75 cents	\$37,500
Less 5 per cent. loss	7,300
	<u>\$30,200</u>
Cost	14,500
Profit	<u>\$15,700</u>

More than 200 per cent. in twenty years, or nearly 11 per cent. each year.—*Mr. Barnard in New York Post.*

The estimate for trees is too high; 50,000, at \$10 per 1,000, is only \$500; but it would be better to plant much more thickly, say at least 2,000 trees per acre, or 200,000 trees, which, at \$5 per thousand, would make the outlay for trees \$1,000. Mr. Bryant estimates the thinning of an acre of Larches at 12 years old, leaving 400 for permanent or longer growth, to yield 4,000 posts, which, at 20 cents, would be worth \$800.

The same writer refers to the valuation of the Duke of Athol's trees at different ages :

	Value.
400 trees, at 30 years	\$375
“ “ 40 years	2,250
“ “ 50 years	10,000
“ “ 72 years	15,000

Mr. Schofield, of Elgin, Illinois, is one of the most earnest tree planters. Among all the various kinds tested, he prefers the European Larch, and for the following reasons: It is hardy, of rapid growth, easily transplanted, and bears being set closely. He thinks the timber is unequaled for durability, and having great strength and elasticity, it is valuable for various purposes. Every thinning he counts as a harvest. The first, at seven years, he uses for stakes. The second, at fourteen years, furnishes 3,600 fence posts per acre, which he values at \$1,000 per acre. The third thinning, at twenty-one years, gives 600 trees, worth \$3,000. The fourth cutting, at thirty years, affords him 300 trees, valued at \$6,000. Making a total yield of \$10,000 from the acre in thirty years; but this is not all, for there are still remaining upon the ground 300 trees, a permanent investment, worth \$6,000 more, which will continue to increase the value annually for half a century longer.

Dr. Dunlap, of Champaign, Illinois, has long been an advocate of timber planting on the prairies, urging it with pen and voice upon all suitable occasions, and demonstrating the feasibility upon his own farm. He, too, admires the larch. Here are his calculations for one acre of larch plantation:

Trench plowing	\$5 00
Harrowing and rolling	2 00
3,000 plants	30 00
Freight	1 00
Spade and planting	3 00
Cultivating	4 00
Hoeing	5 00
Cultivation five years	15 00
	<hr/>
	\$65 00
Cost of land	\$50 00
Interest for five years	30 00
Interest on outlay for five years	45 00
	<hr/>
Total	\$190 00

No further attention is needed for the next six years, when the account will stand thus:

One acre of larches has cost	\$190 00
Interest six years	114 00
Taxes	16 00
	<hr/>
Total	\$320 00

PER CONTRA.

1,500 trees, from which we may take 1,000, that gives 1,500 posts, of which 500 at 30 cents, gives	\$150 00
1,000 at 20 cents, gives	200 00
	<hr/>
	\$350 00
Less the expense of cutting	30 00
	<hr/>
Total	\$320 00

which equals cost of land and all the outlay, taxes and interest, repaid at the end of twelve years. But the land is left and paid for, and is clothed with 1,500 larch trees

from 5 to 10 inches in diameter. These, at the end of twelve years more, will be of size for cross ties worth 50 cents each, counting two for each tree, or \$800 for the land and trees at the end of twenty-five years from the planting.

The following calculations are safe: At 4 feet apart, there will be 2,720 plants to the acre. Thinning out every alternate tree at the end of six years will leave 1,360 trees on the ground. At the end of 12 years, one-half these may be cut. The 680 trees will give 136 split posts first cut, at

20 cents	\$272
680 round posts second cut at 20 cents	136
680 round posts third cut at 15 cents	102
Total	\$510

Were the whole to be cut, the yield would be double, or \$1,020 as the value of the tract, and we may say in round numbers that the crop of an acre at the end of twelve years is worth \$1,000.

Or, taking the still safer estimate of 1,200 trees to the acre after being thinned, and allowing a higher valuation of the posts, but still below the market value of posts, we make the following showing:

2,400 split posts at 25 cents	\$600
1,200 round posts at 25 cents	300
1,000 round posts at 20 cents	200
Total	\$1100

It is not, however, good policy to remove the whole crop at this time, for the half that is left at each thinning will rapidly improve until the number is reduced to about 300 per acre, and then for half a century longer these will go on increasing in value in a geometrical proportion.

The following account of an experiment in tree planting done in Hamilton county, Ohio, is important, and is given on the authority of Ezra Sherman, of the White Water village of Preston, Ohio. The seeds of locusts and red cedar were planted in 1830. In three years the locusts were set out in a grove of fifteen acres, and along the highway in an avenue for 200 rods. Mr. Sherman considers that the stakes, poles and pasture of this grove have been worth as much as it would have yielded if free of trees.

In 1870, or 40 years from the seed, two-thirds of the trees along the highway were cut down. These 180 trees made 150 posts, worth 35 cents each, or \$525, that is, from \$8 to \$9 per tree. The stakes and top wood for fuel was worth something besides. Some of the trees in the grove are considered worth \$10 apiece, and the 15 acres thus stocked, are expected to furnish fence posts for the whole farm of 1,500 acres for all time.

The cedar, though of less rapid growth, is highly valued. They will make 8 posts against 30 of the locust trees, but are of higher market value. Mr. Sherman advises the planting of a greater variety of trees, and thinks there can be no better legacy for posterity than a judiciously planted grove of timber. After the first few years the locust borer did not seriously effect the trees.

HOW TO DO IT.

Having now fully satisfied our own minds, and, it is hoped, given acceptable demonstrations to convince others, that the planting of timber is both *necessary, desirable* and *profitable*, not only for the general comfort and convenience of the commonwealth, but for the advantage of the planter and his heirs, it will now be well to inquire, *How to do it.*

SELECTIONS OF THE LAND.

There are, on almost any farm, some portions that are more or less broken and indifferently adapted for cultivated crops. On the most level farms there are knolls and swells, or ravines and swales, but in the hill country there are steep declivities, some of which are rocky or stony. All such lands may be made to produce great crops of timber, and should be so appropriated, to cover them and to prevent the necessity of cultivation or the loss and inconvenience of having them neglected eye-sores and briar patches, wastes, secreting vermin and giving the whole farm a neglected and untidy appearance.

In a champaign country, where the whole surface is arable land, and where there are no such waste spots to occupy and embellish with timber growth, any portion of the property may be appropriated to the grove, but here it may be well to make the plantation as a shelter belt, by planting one or two strips to the windward, say the west, north or south sides. These should be sufficiently wide to protect themselves and the rest of the farm, or from four to eight rods. Mr. Bryant advises a strip of eight rods on two sides of every quarter section of land.

PREPARATION.

The land should be well plowed and harrowed. In raw prairie, the trench plow will will be the best means of preparation; if old ground, any good plowing will answer. Like any other crops, the timber planting will be limited by thorough preparation of the soil for the seeds, cuttings or plants. Large seeds should be set at once in the field; cuttings and delicately growing seedlings had better be started in a nursery.

If the land be very broken or rocky, this thorough preparation of the soil cannot be given to it, and all that can be done will be to clean it up, by grubbing and removing the weeds and briars, digging holes for the trees.

PLANTING.

For the larger seeds or nuts, the ground should be marked off with a light furrow, into which they are dropped and then covered with the plow or harrow. They may be put in hills or squares, like corn. If young trees are set out, it will be necessary to open holes for them with the spade, and in planting them it will be advisable to pack the earth very firmly about the roots. This is particularly necessary with young conifers, such as larch and cedar, and other evergreens. The planting should also be done very early in the spring, or so soon as the labor can be done after the soil is dry enough to work pleasantly.

It has been recommended to plant a crop of corn on the land preparatory to setting out the trees, in which case the work may be done in the fall, planting a tree beside each hill, the cornstalk or stubble will afford protection to the young tree, and guide the planter. In meadow soil properly prepared, the planting of young trees is a very simple affair. The spade is thrust deeply into the ground, a cleft is opened into which the tree is planted, and by inverting the spade the soil is pressed against the roots firmly. When we have to do with the more valuable and costly tree, or with those of larger growth, more care is requisite. The hole must be dug and the plants set by hand, bringing the earth among the roots and upon them, and then stamping it closely about them. When in handling the plants, be very careful to prevent the drying of the roots. This is especially requisite with resinous trees and with some other kinds, such as the tulip poplar. With some of the hardy sorts, such as the cotton-wood and soft maple, a very primitive process is often employed. The little trees are simply laid along, with their roots in the furrows and covered with the plow, after which the land may be rolled.

DISTANCE.

There has been a great difference of practice among farmers, as to the proper distance to set trees in timber plantations. Many have erred by planting too wide, few by setting too closely. Both extremes may seem to follow nature. In the matured forest, the trees are widely separated, it is true, but in the young forest growth they are closely crowded together, and where so crowded the finest timber trees are the result. The widely planted trees will require much labor to train them into shape, all of which may be avoided by close planting.

Many plantations have been made 8 by 8 feet, some wider, but the best practice with almost all tree-planting is to set closely. Five feet and 5x6 is still recommended, but 4x4 is much better, and some advise 3x3. Mr. Edwards, of Illinois, says he would set larches 3x3 as nurses for pines and spruces planted among them every 12 feet. Hickories, chestnuts, elms, and all such trees as may be used for hoop-poles, where these are in demand, can be planted in close drills, thickly, so that in four or five years a crop may be removed, leaving the thinned trees to develop themselves.

CULTIVATION.

The young trees should be thoroughly cultivated for a few years. The first summer the two-horse cultivator may be used, after this the double shovel must be taken. In the fall after planting, it will be well to bank them with a turning plow as a protection in winter. In most cases the hoe will be needed while the trees are small, but in after years the shade will keep down the weeds.

TRIMMING.

When planted thickly there will be little need for trimming the trees. Nature will effect this unaided by her own process of smothering. It may often happen, however, that some species will produce double headers, one of which should be shortened on once or removed. The side branches will soon die and fall off when the tops form a canopy. This is not the case in wide planting; if they have room to spread, the trees will be branched, and it often happens that several of these branches will strive for the mastery. When this occurs all but one should be shortened, or, if small, removed. If a tree here and there appears stunted, or injured by accident or insect, cut it off at the ground in the winter, and it will be reproduced by a strong, clean shoot.

THINNING.

This will require the exercise of sound judgment—nor can it be directed by a set of rules indicating the days and years when it should be done. The object of close planting is to give the trees an upward growth without side branches, but when this has been attained, we must watch lest the plants become too crowded and chafe one another. The period when thinning may become necessary, will depend upon the variety planted and the rapidity of their growth. Some will need it sooner than others, but as a general rule, the plantations should be thinned before the trees are too much grown. If in drills closely planted the supernumeraries must be cut out, taking always the poorer trees, and leaving the stronger with sufficient room for development. If the planting has been done in squares, every alternate tree, or if in close rows, every alternate row may be taken away at the first cutting. In a few years the same process will again be needed as the trees continue to grow and crowd. Every alternate tree may now be taken away,

which will allow sufficient room for those remaining to go on growing for another term of years. By systematic removal of the surplus trees, always taking the weakest, the remnant may be left at the last thinning, at an average of 12 feet apart, at which distance many kinds may remain for a long time.

INCLOSURE.

Whether natural or artificial, the forest must always be kept carefully inclosed so as to exclude all kinds of stock. Young trees especially need this protection from the trampling of cattle; but even large trees in the more matured forests are often seriously injured by intruders of this class.

The preservation of our native forest growths is a matter of equal importance with the planting of groves and copices where the former does not exist. For this purpose the first requisite is their inclosure, so as to preserve them from the depredations of domestic animals. Next in importance is the prevention of fires, which are often allowed to destroy vast tracts of the most beautiful trees, and at the same time to burn up infinite numbers of young trees, that, if not so destroyed or browsed off by cattle, would be ready to spring up into new forest growths wherever the trees already matured should be cut away.

IN CONCLUSION.

An earnest appeal is made to my countrymen to wait no longer, but to begin at once to plant forest trees.

Plant them for their beauty.

Plant them for the shelter they afford.

Plant them for their happy effects in modifying and equalizing the climate, in checking the force of the winds, thus preventing excessive evaporations and cold.

Plant them for their utility upon the farm.

Plant them for patriotic motives.

Finally, if you can be touched by no more refined sentiment—Plant timber trees as a farm crop, for their *profit*, which is a demonstrable proposition, as already set forth.

THE FUTURE OF AGRICULTURE IN OHIO.

Dr. Townshend had been requested to address the Convention, but was prevented by the want of time. At the request of the President of the State Board, he has furnished for publication, the substance of what he had intended to say on this subject.

If we have neither prophetic inspiration nor poetic insight to guide us, we can forecast the future only by a careful study of all the influences which are operating in the present. The present is not an accident, but the legitimate offspring of the past; so the future will not be an accident, but the offspring of the present. Could we calculate accurately all the elements which enter into the problem of to-day, we might obtain a clue to the results as they will appear to-morrow. So if we would give character to the future, it can be done only so far as we are able to control the forces and influences upon which it is contingent. Assuming this to be true, all the influences which may affect the future of agriculture in Ohio, are worthy of our attention.

UNPROFITABLENESS OF AGRICULTURE—ITS CAUSES AND REMEDIES.

Among these are certain opinions which, if generally accepted, cannot fail to have a most injurious tendency; one of these is the following:

In comparison with other occupations, agriculture is unprofitable. The effects of the general acceptance of this opinion will, doubtless, be to lead many young men, whose continuance in agriculture is desirable for its credit and prosperity, into other avocations. How shall we treat this opinion? We cannot uproot it by argument if the facts are against us. We might admit the partial truth of the proposition, and offer in mitigation of the statement that, if the gains of agriculture are small, they are reasonably sure, and if we see no great fortunes made by agriculture to stimulate, on the other hand we see no failures to dishearten. But will this reconcile enterprising young men to farming, especially when they see the probability of lower prices for several of our great staples in the future. For example, how can beef be otherwise than lower, while Texas, which has more cattle than New York, Pennsylvania, Ohio and Illinois together, can raise steers to three years at less cost than we in Ohio can raise yearlings, and can fatten cattle, transport them to market, and sell at prices at which we cannot compete? How can wheat be otherwise than lower, now that the Northwest, where it may be grown so abundantly, is opened by railroads to settlement and to market? So of wool, if a protective tariff would keep the foreign article from injurious competition, what is to prevent our Ohio wool growers from being undersold by the States and Territories west of the Mississippi.

Indeed, I see no means of successfully combating this opinion of the unprofitableness of agriculture, other than by giving new thought and energy to make the opinion less true, or in other words, we must go to work resolutely to change the facts. The profitableness of agriculture must be increased, either by diminishing its losses, or by adding to its gains. Now the farmer sustains severe loss from the sickness and death of animals. May not this be avoided in great part when we are better instructed in veterinary hygiene, and remedial treatment? Then in seasons of excessive moisture there is great loss to crops, both in quantity and quality, which may, perhaps, be avoided by drainage, and especially by underdraining. Then in seasons of drouth like the present, great loss is sustained, because, on many farms, a supply of stock-water has not been secured, and so little provision is made for irrigation, even in localities where it would not be difficult.

On the other hand, many farmers might greatly increase their gains, if, instead of following mere routine, they would conduct all their operations on recognized business principles. How often do we see good business men, who have been successful as merchants or bankers, and, although unskillful, perhaps, in some of the details of farming, yet, on account of good business management, make larger profits from land than our best farmers. And when the farmer becomes as prompt to lay hold of every new fact or law which science reveals, as manufacturers and those engaged in many other occupations, there can be no reason to doubt that the profit of his labors, as of theirs, will be greatly increased.

RURAL LIFE—ITS ADVANTAGES AND DISADVANTAGES.

Another opinion prevails extensively both among men and women—that *agricultural life and labor are not as agreeable as other modes of life and occupation.* If such an impression becomes general, will not its effects upon the future of agriculture in Ohio be most

mischievous? An agricultural life is almost necessarily a country life; and, in the estimation of many, a life in the country has nothing to offer but dullness and stupidity, in comparison with the excitements, attractions and opportunities of a life in a city. Consequently the cities are continually winning away the young men and women that agriculture can ill-afford to spare. In view of this, what shall we do? We cannot make the attractions of the city less. Can we make the attractions of the country greater?

In England, country life is popular and even fashionable. This is, in part, due to a genial climate which makes out-of-door life possible at all seasons of the year. It is also due, in part, to the game laws which secure to the comparatively wealthy a monopoly of exciting field sports. Such sports are out of the question here, where legislation is for the equal benefit of all, rather than for the favored few. But if we could, in some way, impart the love of out-of-door life that prevails there, and the interest in athletic and manly sports, these would be no trifling acquisition. In France a large part of even the agricultural population is collected in towns. I do not recall much of French country life that we could profitably imitate; but there is one very beautiful feature of French home life which is well worthy of transplanting here, that is the cheerful and happy companionship between persons of all ages, and between parents and their children, so different from the austere manners of our somewhat magisterial puritan fathers.

The German countryman appears to be happy over his pipe and his beer. We need not envy him his enjoyment that comes from either; but he has also music which is not only a delight, but a means of elevation and refinement. It is greatly to our disadvantage that music does not more freely lend its grace and charm to rural life in Ohio. But let us return to the question, what can we do to make country life in Ohio more agreeable?

MENTAL AND SOCIAL CULTURE.

We must devise something to make our country homes more attractive, and we must also, if possible, introduce or encourage something that will bring our country population more frequently into profitable and pleasant contact, and so afford better opportunity for mental and social culture. I will not attempt to say what may be done to improve our country homes, but will leave this part of the subject to the better judgment of our wives and daughters. But in regard to promoting mental and social culture in the country, what can we do? I have studied this problem not a little, and see and feel its difficulty. Would you wish to see in every county an academy, a lyceum, a public library, a musical association, classes for the study of some branches of literature or science, or a farmers' club? In many places you will find a lack of good men and women to start and sustain such institutions. In other places you will find good men and women, but they have no plan, and still more likely they cannot agree upon anything. I am sorry to say that it seems to me the greatest obstacle to mental and social culture, in the country, is the spirit of sectarianism of which so many are possessed.

Visit the centers of our rural towns and you will see two, three or more spacious churches; but often no high-school or music hall, or any lecture room where the people can assemble. If the number of churches in country places could be accepted in evidence of the purity and depth of religious feeling, we ought all rejoice; but too often it seems a proof of the narrowness and exclusiveness of men whose life is practically to secure the ascendancy of their own tweedledee over the tweedledum of their neighbors. Their rivalry absorbs all their mental energy, and a large proportion of their spare cash, and makes it impossible for them to unite in any plan for the common happiness.

But for this, one would think the effort for mental and social culture would anywhere

in the country prove a success, and country life in consequence become thoroughly enjoyable. When the Ohio Agricultural and Mechanical College, shall be in successful operation, it may be hoped that its effect will be to diffuse such a taste for science among its pupils and that it will qualify so many to become teachers of science, that scientific associations will spring up and be sustained all over the State.

Manifestly the country has many advantages over the city, for the prosecution of many of the natural sciences.

I have barely touched what seemed to me an important subject. I have asked the questions, how shall we make agriculture more profitable, and how shall we make an agricultural life more agreeable? My answers to these questions may have been partial and unsatisfactory; but if you will make the questions your own, and answer them better than I have done, the end I propose will have been full attained.

The following paper from Stark County Agricultural Society, on protection for sheep, was read before the Convention:

It has long been felt by the wool growers of Stark county, that some adequate protection of sheep from the ravages of dogs should be provided by law; but certain constitutional provisions have always been cited against such protection. Now, in view of the coming Constitutional Convention, would it not be well for the State Board of Agriculture to take up this subject for discussion, in order to mature a plan to be laid before the coming Constitutional Convention for their action. No one will deny that the sheep interest of Ohio is a very material one, and no one will deny that the dogs materially interfere with the interest, which should be remedied if possible.

As a suggestion of a plan, how would the following outline do?

Let it be provided by law, that it shall be the duty of the several assessors of the townships, to annually register the number of dogs, with the names of their owners or harborers, which they may find in their respective townships.

And let it also be provided, that if any person has any sheep injured or killed by dogs, he may at once make complaint of his loss to the township clerk, who shall, on receiving said complaint in writing, appoint two disinterested persons, who shall, after being duly sworn, proceed and upon actual view, appraise the damages sustained by said complaint, and report the same forthwith to the township clerk—said clerk to keep an accurate record of said damages and costs.

And let it further be provided, that at the regular annual meeting of the trustees of the townships, when they levy taxes for other purposes, they shall examine the clerk's record of damages done by dogs to sheep, and shall levy the amount of said damages and to cover costs on the registered dogs of the township, which tax shall be collected from the several owners or harborers of dogs in the same manner and at the same time as other taxes are collected, and after said dog tax is collected and paid over to the township treasurer, the clerk by order of the trustees, shall issue his order to the several claimants for their damages.

It is believed that such a plan, well framed, would meet the case in a satisfactory manner—for it is believed that persons owning worthless dogs would destroy them in order to avoid the tax—and if the worthless dogs were destroyed, there would be no damage done to sheep by dogs and consequently no tax to pay.

J. H. BLAIR,

President Stark County Agricultural Society.

The following resolution was offered by J. C. Stevens :

Resolved, That the petition of the Agricultural Board of Stark county be referred to the Legislature of Ohio, with the request that such law be passed as will protect the wool growers of this State against the ravages of dogs.

J. C. Stevens. I desire the expression of the convention upon this subject. Heretofore the Legislature has never been able to find any constitutional authority to legislate upon this subject, but when they realize—as a gentlemen recently told me they had in Vermont—that the sheep have more votes than the dogs, they will have no more trouble to find constitutional authority for the passage of a dog law.

We have had presented to us here several able arguments in reference to the preservation and restoration of the original fertility and productiveness of the soil. Owing to the ravages of dogs, many persons are deprived of the advantage of sheep husbandry, which must be admitted by every man to be the best system of husbandry to preserve the fertility of the soil. It strikes me we should ask the Legislature to pass such a law as will enable those engaged in this pursuit, to compete fairly with the other industries of the country.

Statistics are furnished annually, giving the loss to the country in consequence of these dogs, and this loss is so great as to demand measures for its prevention. I think the least we can do is to refer the matter to the Legislature.

Dr. J. A. Warder. I suppose that if the dogs could have been killed by resolutions, they would have been killed long ago, as resolutions upon the subject have been offered again and again.

I am one of the sufferers in the district where I live, and can get no compensation for my losses in this direction, for the owners of the dogs are not worth anything if you find them. The only way is to shoot the dogs, and then you run some risk.

I think we want something more stringent than our present laws—means to outlaw dogs.

Judge Wm. Lang, of Seneca. We have tried all sorts of dog laws, and we have tried taxing them, but it has had about as much power for good as throwing water upon a duck's back, and has not saved a single sheep. We keep two very good rifles, and make it a practice to shoot every dog that comes near the house unaccompanied by his master or owner.

C. Caswell, of Erie county. Stock-men and others who keep dogs are not in favor of such a plan. They favor legislation, and believe a remedy can be provided in that way so as not to be objectionable. They have a law in the State of New York that taxes dogs, and a fund created from this tax is kept on hand at all times, and whenever sheep are injured or

killed, an appraiser appraises the damages, which are paid at once. I think that is the true system.

Ed. Rose, of Perry. One half the people say we can get no suitable legislation on this subject, and the other half say we can. If we come up like valiant men and show our front unitedly, we will get it. We have a right to ask from the Legislature anything that is reasonable and right that will ensure protection to the interest referred to in the resolution presented. Whenever the people agree, they will get it, but when they are themselves divided, they will fail to get it. The idea of having this interest taxed as it now is, and have no protection against the destruction by dogs, is an outrage.

D. W. Harris, of Logan county. I think unless we tax the dogs and make their owners responsible for the damage they do, that the township assessors should be authorized to kill every dog not registered for taxation.

J. M. Millikin, of Butler county. I think the difficulty results from our Constitution, which provides that all property shall be taxed equally. This provision of the Constitution is imperative, so that you must tax all property according to the true value thereof.

Already we have a law which authorizes, when sheep have been killed by dogs, that the dogs shall be killed, and the parties owning the dogs are made responsible to the owners of the sheep. I don't know what further you can do by legislation.

It is possible, as we are to have a Constitutional Convention, that that provision might be so improved by some special legislation on the subject, as to overcome the difficulty. Until this is done, though you may express your opinions, there are no means by which you can accomplish through legislation the end desired.

P. W. Wickerham, of Highland. I would like to have the sense of this convention in regard to hounds, as to whether they should be exempt from the provisions of a law for the protection of sheep. Captain Dogget, a very intelligent gentleman, likes to keep hounds, and says they are a protection to sheep, by ridding the country of foxes; for foxes, he says, will kill the young lambs, so by keeping down the foxes the hounds protect sheep husbandry. (Laughter.)

B. W. Carlisle, of Fairfield, moved the reference of the paper to the State Board of Agriculture, with instructions to prepare such a paper as shall be proper to present to the Constitutional Convention.

Judge. Wm. Lang. My friend Millikin has brought to my recollection that constitutional question about which there is no dispute. Some years ago I had several conflicts with a friend in this chamber in reference to

fixing a law for the protection of sheep. That friend said the people would not pay taxes on their dogs; that they would kill them rather than pay taxes on them. My opinion then was this, and with your permission I will repeat it: I concede now this constitutional provision, that all property should be taxed uniformly; and if there is property in dogs, they should be taxed according to their value. But it seems to me, a law of this nature could be passed without any constitutional scruples—that is, when the township assessors make their annual rounds in the spring to assess the property in the township, that it shall become their, duty by law, to take down the number of dogs, and the names of every owner of a dog, and return such list to the auditor—not to the trustees; I don't like that plan; it is a good deal like the township ditch law—but make his returns to the county auditor. And let it be made his duty by law to prepare a book containing an alphabetical list of the names of each man who owns a dog, and whenever the owner of sheep shall have any killed by dogs at any time during the year, whether he is an owner of dogs or not, let it be his duty to make his report, accompanied by testimony, and deliver to the auditor the amount of his losses, stating the number of sheep killed, the time, circumstances, name of place, township, and such other proof as the Legislature may provide for; and at a certain season of the year let it be the duty of the county commissioners to compel the owner of every dog in the county to contribute his proportion of the amount of the damages done.

J. M. Millikin. Do you propose that my dog shall be responsible for damages done by other dogs?

Judge Lang. I want the Legislature to declare in the act, that the keeping of dogs is destructive to the wool growing interest of the State, and that every man who keeps dogs shall contribute his share towards paying for the damages done.

It seems to me we can meet it in this way without encountering this constitutional objection. It is not taxing them, but is declaring the thing a nuisance, and making the keeper of such nuisance responsible for the damages resulting therefrom.

A Member. But nine ninths of the owners of dogs are irresponsible.

J. O. Stevens renewed the motion to refer the matter to the State Board of Agriculture, to be presented to the Constitutional Convention. The motion prevailed.

DECLINATION OF J. M. MILLIKIN.

J. M. Millikin. Some kind friend saw proper to propose my name as a candidate for member of the State Board of Agriculture. I wish to say

I enjoyed very much the services on that Board for six years, and I now beg leave respectfully to decline being a candidate for re-election.

P. W. Wickerham offered the following resolution, which was adopted :

WHEREAS, The distribution of the State Agricultural Report by the auditors of the several counties has failed to fully meet the object of the publication of said Report, viz : to give the widest possible circulation to the information therein contained, among the farmers of the State; therefore,

Resolved, That we hereby recommend to the General Assembly of the State, now in session, the passage of an act providing that the distribution of the Agricultural Reports hereafter to be issued shall be made by the officers of the County Agricultural Societies to farmers of their respective counties and of every township of said counties.

AGRICULTURAL BUREAU.

Judge Lang offered the following :

Resolved, That when the Constitutional Convention is in session, petitions be presented requesting said Convention to devise some plan for the permanent establishment of an Agricultural Bureau or Department.

J. M. Millikin. Does the gentleman contemplate something additional to the State Board—some additional machinery that will come in contact with the State Board of Agriculture ?

Judge Lang. I mean simply this: Here we have the Secretary of State, Auditor of State, Comptroller of State, etc. We ask that an agricultural department, or agricultural bureau, shall also be one of the institutions of the State to be provided for in the new Constitution. And let the secretary of the agricultural bureau—or whatever he may be called—be *ex-officio* secretary of the State Board of Agriculture.

My object in offering this resolution is to have an agricultural department connected with the departments of State, so that instead of waiting for the reports of the Secretary of State—which have been very good and valuable—this department of our State institutions shall make a report to the Legislature or to the Governor, informing the people of the condition of the interests of agriculture, stock raising, the mechanical arts and everything connected with it, in a regular form like other departments of State. We desire that the Constitution shall acknowledge the dignity and importance of agriculture sufficiently to give it a position in the heads of State.

There is another thing, which I have not time now to dwell upon, which has recently been created, and of which I think every American citizen has reason to be proud; that is the Department of Agriculture at the capital of the nation. This department there represents the very life-spring of the nation, the great fountain out of which everything dips—

the great can that greases all the wheels of State. And that is a sort of sinecure. The Secretary of the Treasury, of the Navy, of War, etc., constitute the President's private council. That is all right enough, but the gentleman representing the agricultural interests of the country—an interest almost head and shoulders above all the others—takes an outside seat until the Cabinet is open for the reception of strangers. Why he should not be received as a member of the Cabinet as well as the rest, I cannot see. Now I want this Constitutional Convention to acknowledge, by provision in the new Constitution they are going to give the people, the dignity of agriculture and the mechanic arts by opening in the State House a department for that purpose.

J. M. Millikin. I suggest the propriety of referring the resolution to the State Board of Agriculture. I doubt, however, very much the propriety of increasing the number of departments in our State government, because we have enough expenses now to defray.

We get all the statistics mentioned from the Secretary of State or Auditor of State, and afterwards from the Secretary of the State Board of Agriculture. It might be well enough, however, to mature some plan by which a Bureau of Agriculture might be organized.

Wm. B. McClung. It has for some years been a question with reference to the State Board of Agriculture, whether they have a right to a place in the State House, and it is proper that attention should be given to the matter, that we may know whether we really have this right or not. The committee on rooms in the State House have about come to the conclusion that we didn't belong to the offices proper, in the State House, and once or twice they had about determined to have us taken out entirely.

The resolution contemplates putting this question beyond a doubt, that it shall have a place here in reality, and it is proper that the Constitutional Convention take the steps necessary to establish this department, that the State Board shall not have to treat with gentlemen here annually to give them a place in the State House.

J. M. Millikin. I am willing that the rights the gentleman speaks of be secured to the State Board of Agriculture, and there should be the recognition referred to—a sufficient guarantee that it shall have a habitation as it has a name; but my comprehension of the resolution is that it contemplates a different organization. I am willing it should be referred to the Board for consideration.

Judge Lang. It is well known that the Secretary of the Board has been in danger of losing his rooms, and at one time they were going to put him in the flag room. The institution has been regarded as a sort of sinecure, and has to go begging. I made the motion, and will do everything I can to discourage this lack on the part of the law makers of our country to

acknowledge the importance of our agricultural interests. We are regarded as clodhoppers and menials; but we will make them understand that we are their masters, and feed them.

Peyton Hord, of Marion county. Men come up here sacrificing their time and money laboring to build up the interests of agriculture, the life-blood of the country, and have a right to have their voices heard. For a long time we have been afraid to open our mouths because we belong to the plow. Agriculturists should now awake and send up to the Constitutional Convention men of energy and brains, and remedy the evils of which we complain.

P. W. Wickerham. I have been pleased with this discussion, but surprised to learn that there has ever been any disposition on the part of the Legislature to treat the State Board of Agriculture disrespectfully.

I understand that the present Legislature is composed largely of farmers. I am here for the first time, and am glad this resolution has been introduced, and hope it may lead to good results to this great interest with which I have been connected all my life.

There should be the best of feelings existing between the Board of Agriculture and the General Assembly, and if this is the proper means of bringing that about and making your interests harmonious, it should be favored without regard to expense, as we go to great expense in other things that do not compare with this in importance.

Though the farmers are numerically stronger than those in other occupations, yet from their diffidence or for want of experience in public speaking and legislating, their influence often amounts to less than one-tenth the same number of legal gentlemen in your General Assembly. It is right and proper that this Convention should point out a way to increase the influence of men identified with this interest, and perhaps this resolution, if adopted, would have that result.

P. W. Hardesty, of Paulding. I would suggest to instruct the Board to require a recognition in the new Constitution of the Secretary of the State Board of Agriculture as one of the officers of the State. There would be a marked difference, perhaps, between creating it as a part of the government and leaving it independent, and having the Secretary—being the most important officer of that Board—elected by the State at large instead of by the separate interest of agriculture.

J. M. Millikin offered the following substitute, which was accepted by the mover of the original—Judge Lang—and adopted by the Convention :

Resolved, That the State Board of Agriculture be requested to thoroughly mature and present to the next State Constitutional Convention some measures by which the present State Board shall have full recognition, or that an Agricultural Bureau be established.

W. B. McClung offered the following, which was adopted :

Resolved, That we respectfully ask the Speaker of the House of Representatives to place at the head of the Agricultural Committee a practical agriculturist.

The Convention then took a recess until 7½ P. M.

EVENING SESSION.

ELECTION FOR MEMBERS OF STATE BOARD.

The Convention re-assembled at 7½ P. M., and proceeded to elect, by ballot, five members of the State Board of Agriculture.

On motion, the President appointed W. B. McClung and J. W. Ross as tellers.

FIRST BALLOT.

(No. of votes cast, 79; necessary to a choice, 40.)

Millikin.....	1
Hickox	41
Delano.....	55
McClung	5
Cannon	25
Jamison	37
Evans	13
Morton	6
Brown	3
Moore	14
Earl	13
Carlisle	34
Ohmer	9
Miller.....	1
Hill	28
Robinson	24
Kendall.....	11
Koller	9
Daugherty	4
Anderson	7
Kirk.....	24

Messrs. W. S. Hickox and L. G. Delano having each received more than the required number of votes, they were declared elected.

The names of Messrs. Morton, Brown and Daugherty were withdrawn, and the Convention proceeded to a

SECOND BALLOT.

(No. of votes cast, 75; necessary to a choice, 38.)

Cannon	23
Jamison	40
Evans	7
Moore.....	6

Earl	6
Carlisle	24
Ohmer	6
Hill	26
Robinson	25
Kendall	6
Koller	5
Anderson	1
Kirk	24

Mr. Jamison was declared elected.

Judge Pugh withdrew the name of Mr. Moore, of Franklin, and other gentlemen withdrew the names of Messrs. Earl, Kendall and Koller. The Convention proceeded to the

THIRD BALLOT.

(No. of votes cast, 75; necessary to a choice, 38.)

Cannon	19
Evans	1
Carlisle	35
Ohmer	5
Hill	24
Robinson	31
Kirk	22

No one having received a majority of all the votes, there was no election. The name of Mr. Ohmer was withdrawn.

FOURTH BALLOT.

(No. of votes cast, 71; necessary to a choice, (36.)

Cannon	21
Evans	1
Morton	1
Carlisle	33
Hill	26
Robinson	29
Kirk	22

No choice being made, the Convention proceeded to another ballot.

FIFTH BALLOT.

(No. of votes cast, 74; necessary to a choice, 38.)

Cannon	21
Carlisle	41
Hill	20
Robinson	35
Kirk	19

Mr. Carlisle was declared elected. Mr. Hill's name was withdrawn.

SIXTH BALLOT.

(No. of votes cast, 73; necessary to a choice, 37.)

Cannon	26
Robinson	31
Kirk	12

No election. Mr. Kirk's name was withdrawn.

SEVENTH BALLOT.

(No. of votes cast, 68; necessary to a choice, 35.)

Cannon	35
Robinson	33

Mr. Cannon was declared elected.

PERMANENT LOCATION OF THE OHIO STATE FAIR.

[This subject was introduced at the morning session, but after a few remarks upon it, was laid upon the table for the time being; at the close of the election—near 10 o'clock at night—the discussion of the subject was resumed.]

H. P. Gage, of Hardin county, moved that the State Fair be permanently located at Columbus.

J. O. Stevens, of Hardin. I hope the motion will not meet with the approbation of the Convention. It is, perhaps, not the thing the industrious laborers and farmers of the country would desire. It strikes me that the arguments in favor of moving our annual fair around over different localities in the State are stronger than the arguments that can be offered in favor of a permanent location. I have changed my opinion on this subject, and have become convinced that taking our fairs around to different parts of the State has resulted in the greatest good to the greatest number. As it now is it brings those expositions within the immediate reach of a greater number of people who are identified with our agricultural interests. The stock and articles that are on exhibition are, by this plan, brought to the immediate attention of a greater number of people. The design and object of our fairs are to educate our people, and how can you better do this than by bringing these exhibitions within the reach of the greatest number? It is the more illiterate and more ignorant portion of the people we want to reach. The more intelligent will attend these fairs, let them be where they may, but there are a certain class that do not attend unless they are brought to their door.

I am forcibly persuaded that it ought to be changed so as to be confined to three or four points in the State. If that be the conclusion of this Convention—as I think it must be—we can then select three or four points that will justify citizens to erect good buildings, and make them permanent

and ornamental, rendering our fairs attractive and desirable. If located at one point, as a matter of course all would prefer a location at Columbus. The strongest argument that can be urged in favor of a permanent location is the expense in consequence of the depreciation of the material used in fitting up the grounds, and that, I think, can be obviated as I have suggested, by taking it around to two or three or four points.

H. P. Gage. This traveling about of our State Fair has destroyed the great interest of all in it. Look at the exhibition at Cleveland—the Northern Ohio Fair, for example, and see what a success that is. Backed by the people of Ohio, the State Fair has been kept up and flourished, but if we had a great and permanent institution of the kind at the capital I am satisfied its success would greatly exceed what it has been in the past. It is an old saying that three moves are equal to a break up, and these four moves are worse than a break up. It seems to me we can get men enough in this body to say it shall be located here, in connection with the Agricultural College, where it ought to be.

C. Caswell, of Erie. I am very much in favor of a permanent location. My opinion is that there are two ways in which it might be satisfactorily arranged. One is to have one permanent location. The next is to have three permanent situations—a northern, central and southern one. The old plan of tearing down the buildings and moving around is not satisfactory. Our State Fair, I think, ought to be far in advance of what it is. The time has come when the people are not satisfied with our present fairs, and want something better. They have better exhibitions at home in their county fairs, and better improvements than we had at our State Fairs a few years back. With one or three permanent locations we could make it such an institution as would attract the people from all parts of Ohio and from neighboring States.

Ed. Rose, of Perry. Wherever the State Fair has been held before it uses up the county fair, and not only weakens the county fair, but absolutely weakens the State in its efforts.

Another reason, perhaps, for its permanent location is because of its name. If this capital should be moved around from place to place it would lose very much of the prestige it has from its permanent location—a kind of centralizing influence upon the minds of people of the great State of Ohio.

Then the variety of articles that could be placed on exhibition would greatly exceed what it would be if held in some secluded corner of the State; because if you have it at Springfield, we should have it in Perry and other counties, and after awhile it would be used up by taking it out of its proper place. There is a place for it, and, of course, that place must be here.

W. H. Gibson, of Seneca. I think the history of the agricultural pursuits in the State of Ohio demonstrate that it is a matter of the first importance that it be located somewhere. I am in favor of locating it at Columbus. Columbus is the capital of our State—a State numbering nearly three millions—and in every single enterprise that pertains to the State capital the entire people of the State have an abiding interest.

Locate your State Fair here, and with the railroads now built and those in process of construction the remotest parts of our State can visit our State Fair. In addition to that attraction, every citizen will desire sometime to come to see the capital of their State, where they can look upon this magnificent structure—and I may be a little extravagant, but I would spare neither pains nor expense in making Columbus, the capital of Ohio, so elegant that it should surpass in magificence the capital of any State in this Union. That would be my ambition.

Now with the capitol, the benevolent institutions, and the various enterprises being built up and developed here; with the Agricultural College located here, let us establish the State Fair here, and make good and permanent improvements upon the grounds.

We are able to do it, and the people are anxious that it shall be done. I can say this for my section of the State; not only the county I represent, but I believe the whole of north-west Ohio, are in favor of a permanent location, and of making it here, and making the buildings not only permanent, but on a large and magnificent scale, that shall be worthy of the State.

If you please, take the county fair ground of this county, and let us put up buildings thereon that shall be so attractive that when we have a State Fair men shall not be crowded into a few board shanties. I tell you this is unworthy of our State. Let us have an elegant fair ground, and we will attract the people from Indiana, Kentucky, Tennessee, Illinois, Missouri, and other great States, and will make our State Fair useful alike to the people of our own State and of the whole country. Now I do believe that is the spirit that animates the agricultural population of Ohio. I know the arguments that may be used against it, but I have canvassed this whole thing, and come here to represent the voice of the people whom I represent.

Let Cincinnati run her great exposition; that is an enterprise in which every citizen in Ohio should take a just pride. Let Cleveland run her Northern Ohio State Fair; that is something in which every citizen of the State should take pride, and no man should feel any enmity or spirit of jealousy in regard to it. But let us, in the great geographical center of the State, build up a fair that shall be the common fair of the whole population, and make it a point of attraction, and I tell you in its results, in

the information it will diffuse, and in every respect, it will redound to the benefit of society and to the credit of our great State, and I am ready to vote for it. (Applause.)

Judge J. M. Pugh, of Franklin. I was directed by the Franklin County Agricultural Society to tender to this honorable body the free use of their fair grounds, containing ninety-three acres and a fraction. We have some four hundred stalls on the ground, and some of the finest halls in the State—one 46 by 96 feet. We have also on the ground a half mile track and a mile track. There are no better tracks in the Union to-day. The grounds are accessible from three streets; we have a street railroad on one street, and have another started on Long street, convenient to the depot, which, by next year, will be completed to the fair ground. We have also the assurance that if the fair is located here for a series of years the Baltimore and Ohio Railroad Company will construct a switch from their road to run within the fair ground. We think these inducements enough to locate the fair on the fair ground in this county.

J. M. Millikin, of Butler. I agree with the gentleman to my right with regard to the importance of the discussion of this subject. Other conventions for the last sixteen years have almost annually been discussing it. I don't think there is one gentleman who has had much of the management in conducting the fairs under the auspices of the State Board that will be found in favor of an attempt to make a permanent location of it. I say an attempt, because I hold that it will be found utterly impracticable. And if it is proposed to make it permanent now, another convention will be sure in a few years to make it anything else than permanent. You may go and invest a large sum of money for the purpose of making magnificent grounds and buildings, but I hold it will prove utterly impracticable to make the location permanent. I know that gentlemen who are familiar with this subject are honestly satisfied the people living in remote sections of the State will never consent to have it here. (Cries of "That's it, that's it.") I am sure the gentleman does not speak for the entire northwest part of the State. (Voice "That's so.") He certainly does not speak for Toledo. The location of the fair at Toledo caused the diffusion of a spirit of interest and progress in agriculture in that section never manifested before.

Are there gentlemen here ready to give five thousand dollars for the annual fitting up of the ground? What are the facilities with regard to railroads and the condition of the hotels? You make this a permanent thing at the city of Columbus and there will be such requisitions made by the railroads as the people will not permit twenty-four hours. Five thousand dollars is a very small amount to be raised when they desire the fair.

In most States they contribute from ten to fifteen thousand dollars, and offer other facilities for the location of the State Fair.

Though I am not in favor of holding it continuously in the city of Columbus, yet I have as much pride in the prosperity of the city of Columbus as any other gentleman here, and am in favor of affording every facility for developing its growth, and desire to see it built up, but I do not desire to come here from year to year for the purpose of attending the State Fair. And I predict if you locate the State Fair in the city of Columbus it will degenerate to a mere county fair in point of the numbers in attendance.

I know gentlemen who have gone into the State Board of Agriculture with the idea that the fair should be permanently located, who have, in a few years, become entirely satisfied that it was utterly impracticable. And I say the State Board will not be able to hold the fair three years if it is located permanently here. That will be the end of these exhibitions. I think this question, under the circumstances, ought not to be decided to-night. I regard it a great question, so far as the interests of agriculture are concerned; therefore I am opposed to adopting the resolution which has been offered.

J. C. Stevens. I don't propose to allow Col. Gibson to represent the entire northwest. I claim to belong to that portion of Ohio, and must say I am well convinced that the majority of the counties in that locality would certainly oppose a permanent location at any point. If it is to be permanently located, as a matter of course we would all have a pride in locating it at our capital—Columbus. But certainly we will never consent to a location at any one point. It appears to me that at this late hour this resolution should not be called up, and forced upon us, when delegates that represent some parts of the State may have retired. As Major Millikin says, the permanent location here would cause the State Fair to dwindle down to a mere local society.

Wm. B. McClung. This resolution has certainly struck the key-note of a subject of much interest, and has been the means of bringing gentlemen to their feet. Even my friend Millikin and my friend Gibson are interested in the matter, and well may we all be interested in it. There was a time when the Ohio State Fair reigned a monarch in the State. Do what the resolution contemplates, and, in my opinion, it will still remain so. There is no use at this late day of trying to cover up from view the condition of the State Fair. Nobody need say that it is in deep waters, but it may be well for this convention to take the latitude and longitude in regard to this matter and see where we are. It will not do, sir, for my friend Millikin to get up and make the assertion that the fair will be a failure in a short time if located at Columbus. This question must be

settled upon other grounds than mere assertions. It must be settled by the evidence which surrounds us.

Now if I understand the reasons why the location should be permanent in order to make the State Fair a matter of permanent interest, it is: first, that these exhibitions should be of the highest order; not only of the highest order, but that any of the awards should be that *certain* award that when once made will be proper and just. As it is now in our State and district fairs, there may be a certain award on an article in one section of the State at one time—for instance, at your district fair, or the Northern Ohio Fair, and then that article be brought to the State Fair, and perhaps in nine cases out of ten the judgment of those who awarded the premiums will be reversed. Now, sir, I am one that believes we should have the State Fair fixed at one point—and I beg leave to differ with my friend in regard to this matter—but being for a number of years a member of the State Board I have watched this matter, and I think the last fair indicated that we should settle this question. We have a fair at the north and on the south of us, and paying a trip to the beautiful town of Springfield, noted for her mechanical enterprises and zeal, the State Fair was held at that place. Major Millikin, as well as all the rest of us, knows that while we had a good exhibition, we needed something else to sustain the fair at Springfield, and that as it was the people did not come to it. In other words, they went to other quarters in large numbers to witness other interests, either to the fair at the north or to the Cincinnati exhibition, going on at the same time, and which took some out of the very city where the fair was held. This is the condition we are met with to-day, and there is a liability of district fairs being started in other parts of the State. I have heard since I came into the room that if certain demands are not complied with, district fairs will be started in some sections of the State. Is it not proper, then, that the great central State Fair of Ohio should be located at Columbus? My friend asks where this five thousand dollars is to come from to fit up the grounds annually? I ask where the money is to come from to tear down and build anew the stalls and other improvements when changed about? Look at the destruction and loss of the material which is put into the buildings. After the fair closes, the machinery and everything must be torn down and taken away and the lumber sold off at half price, and the State Fair go begging to get \$5,000 from some other place to hold the fair. If it was permanently located these things would not be so. If located at Columbus the citizens would take pride in making permanent improvements. I know to-night there are a half dozen localities wanting the next State Fair, and gentlemen who have had experience in the matter know that if it goes to these places they will come away with empty coffers.

Would not our State Fair now accomplish the end designed better, if we had, in connection with it, an exposition built up like the one at Cincinnati. Cincinnati, as I understand, makes the argument that if the fair would come there, in connection with the exposition, it will draw the people so as to make both a success. What would give the State Fair the grandest success it has ever had, I think, would be to locate it at the city of Columbus, and erect buildings of tasteful architecture for the reception of the handicraft of every department of mechanics and ingenuity, and in connection with this exposition have the annual bringing in of stock, etc. I tell you, gentlemen, you could thus rally around the capital a larger crowd than ever visited our State Fair. There could be such a combination of objects of interest here as could not be found in any other place in Ohio. When thus permanently located on this ground, of which the gentleman says there are nearly a hundred acres, there could be some attention given to the growing of trees, and it is possible that in time there should be an orchard bearing various kinds of fruit, so that when different kinds of fruit were brought to the fair they might be compared with those growing upon the grounds.

Then, gentlemen, in conclusion, let us as nearly as we can divest ourselves of all prejudice. Don't let the North-west say they are opposed to the location here, or any other section of the State be governed by the prejudice in the matter. There is no section of the State that is not reached from this point by railroads, and if a great Fair were held here at the Capital with all its elegance and its other attractions, we would see the people coming from all parts of the State in great numbers to this great Exposition and representation of the agricultural and mechanical interests of the State of Ohio.

One word with regard to the State Board of Agriculture—and I don't say it because I am just come out of the Board—but I believe it is one of the most self-sacrificing bodies that has ever been in the State of Ohio. But the question comes up now, whether or not this matter of a State Agricultural Fair has not reached a point that something else shall not be done to insure its success, and whether there should not be some legislation to bring this about. I don't think the State Board can locate it by any means. We are creatures of the legislature—they can make and unmake as they deem best, and if they see fit to-morrow, can turn us out doors. But if the General Assembly, upon looking over the whole ground, think it should be located at Columbus, and if legislation upon the subject be required, let that legislation come when needed. (Applause.)

P. W. Wickerham moved that the Convention adjourn until next day.

On motion of J. W. Ross, the motion to adjourn was laid upon the table.

A motion to lay the resolution under discussion upon the table was lost.

T. Wilson, of Hamilton county. I wish to say a word for south western Ohio. We have in Hamilton county, Fair Grounds containing eighty-one acres. The State has held no Fair in that section for the last fourteen years.

Hamilton county pays over one-sixth of the taxes of Ohio, and we claim that we have a right to be heard on this question. We invite the State Board to consider a proposition which we shall file with them to locate it for two years or more in that county. While we admit there are some arguments that seem to favor a permanent location, and Columbus would be the place if a permanent location were decided upon, yet we do not admit that at the present time, the people of Ohio are prepared to submit to a permanent location, though that time may come. We believe if the last State Fair had been held there it would have proved a success. The Exposition has been held there the last two years and will be held again this. They have now a fund of one hundred thousand dollars for that purpose, and expect to hold it for six weeks during the fair. We believe the Fair can be held on the county Fair Grounds during the Exposition, and be made more successful than the one alone, and you are aware that the Exposition last year was a great success. With the additional grounds and buildings that are to be put up, it will be much more attractive, and we believe that the Fair if held there at the same time, would attract the crowds during the day to see the stock, agricultural products, &c., and that they would attend the Exposition at night, which is the best time to visit it. We confidently believe when we make a presentation of the proposition we intend to present—unless the vote be taken on this question to-night, which I don't think will be done—the inducements we will offer to locate the Fair there for two years, will cause it to be taken to Hamilton county.

W. H. Gibson. I want to remark that I did not attempt to represent all north-western Ohio. I am willing that this vote shall test the sentiment of the people. I speak of what I know in regard to the feeling in my section of the State. If this thing is to go to Cincinnati, then it must go to Dayton, and Toledo—Toledo is my city—that is, my neighboring city, within an hour's ride; but Columbus is the Capital of my State. I live close to a city that is one of the "centers of civilization," and, of course, Tiffin ought to have the State Fair. This State Fair must be the grand aggregation—the grand tabernacle exhibition of industry, agriculture and mechanics, in this State, and I am ready to say that it should occupy this central position.

Now, I am opposed to going to Cincinnati and entering into partner-

ship with a private enterprise—which I admit is a success; I am opposed to going to Cleveland and going into partnership with a private enterprise there. This State Fair, managed by the State Board of Agriculture, rests upon the contributions of the people of the State—it is the creature of the people. Take it to Cincinnati, and how are the persons going to attend it who live in Ashtabula county? There is a great advantage in having it centrally located, instead of putting it to one extremity of the circumference of the State. The annual waste of changing about would almost meet the ordinary expenses of the Fair.

It is quite true of county organizations, that they are not prosperous until made permanent. I know that in my county, we commenced in 1852 going about from village to village exhibiting our stock, but I tell you it was a humbug, and the people of the county said they wanted it located, and when the county commissioners made an appropriation for the land purchased for the Fair Grounds not a man of any party, sect or previous condition protested; but all said amen to it. (Laughter.)

Now Toledo, Zanesville, Dayton, and a score of other cities can accommodate the people who attend the State Fair; but the object in moving it around is not to get accommodations for the people merely, nor to increase the business of landlords, or anything of the kind.

If I understand the matter, the action we take here to-night cannot be final and conclusive upon this point. But I suppose this expression of ours will be but the expression of the State Agricultural Society in favor of a permanent location, and I suppose, in order to carry out the object in view, some additional legislation would be required, and if so, I would be in favor of that additional legislation.

J. M. Millikin. With reference to the Indiana State Fair, I would say that there is no city within the limits of that State where they can so well hold the State Fair, because of the network of railroads all tending to that point. In a new State like Indiana it is out of the question to hold it in the smaller cities. They endeavored to hold their State Fair in other localities, but the attempt proved disastrous, and they abandoned it.

I think it may be best to make arrangements for the location of our Fair not at one point, but if necessary at three or four.

If thought best make a partnership arrangement for holding it on the the County Fair Grounds of Hamilton county, and at Cleveland, Toledo, Columbus, and perhaps Dayton, and let the structures that are built up be the property, under an equitable arrangement, of the county boards in the several counties, and in that way the destruction of property referred to, in tearing down and building up, could be avoided.

Again, it is threatened if the State Fair is not located District Fairs will spring up. Just locate the State Fair and you will see District Fairs

spring up in all parts of the State. I promise you for one—not that I take any interest in it—that you will find a District Fair established in Southern Ohio.

Do you suppose that that section, with a population of 500,000, is going to be tributary to Columbus in all future time? Where they are paying nearly one-fourth of the taxes, where there is near one-fourth of the population of the State, do you suppose they are coming to Columbus every year in order to have the opportunity of viewing this imaginary exhibition so extravagantly drawn by my friend? No, sir, they will not do it. The northwest will not do it, the southeast will not do it. The people will very willingly come to Columbus every few years—say two out of every eight—but they will not be tributary all the time to Columbus or any other permanent location.

I was surprised at another remark by the gentlemen in regard to the premiums awarded and the relative value of stock. I would like to know if the judgment of gentlemen called upon to judge of the merits of stock or other articles, will be improved by a location at Columbus. Will they have any more wisdom, or be any more honest? I don't believe they will. I don't believe we will find men more scrupulous in the discharge of this duty than those we have had, by a permanent location at Columbus or any other place.

Again, the railroad interest in connection with this subject is one of no inconsiderable importance. You locate this State Fair here permanently, and what will Tom Scott do, so far as affording railroad facilities are concerned?

What will be done by this new departure candidate for President of the United States—who has the management of most of the railroads of the country, and who, as I understand, would not allow the people to travel at half rates to the Fair at Springfield?

[The inquiry being made whether there had been no reduction of fare on the roads under the management of Mr. Scott, the Secretary, Mr. Klippart, stated that two cents per mile had been charged, and that the regular fare was three and a half cents.]

Other roads allowed passengers to go at half fare, but this company refused to do so, and the moment you locate the Fair here, the railroad companies will make the terms to suit their own interests, and will not regard those attending the Fair. In my judgment there can be no argument offered in favor of this resolution.

R. C. Thompson, of Lucas. I have been at every State Fair for the last eighteen or twenty years, and from my limited experience and observation, I believe there was more good done to our State by the one held at Toledo, than was ever done by any one of them. Three-fourths of the inhabitants

of the northwest had never attended a State Fair until it came there, and it opened their eyes to all its advantages—to the improvement in stock, farm implements, etc. If a person who visited that section of country four years ago should visit it now he would be astonished at the advance made in agricultural matters. I was informed by one of the officers that the Fair held there brought to this Society twenty-four thousand dollars, so that it was a profit to the Society financially.

I am opposed to locating the State Fair. It is easier from the whole northwest to go to Cleveland than to Columbus. I hope you will consider the matter calmly and not be influenced by any selfish motives in the matter. I do not think it proper to locate it now, and as a representative of the northwest, will vote against it.

W. B. McClung. In regard to the objection that advantages would be taken by railroad companies if the Fair were located here, I would say that the people would have the same power they have now. That question would be fought by the people, and when Tom Scott or any other monopoly would try to oppress the people they would take the matter in their own hands.

C. Caswell, of Erie. The receipts at our county fair last year amounted to \$10,500, though we had no State Fair to teach us a lesson. It is true our people went to the Northern Ohio State Fair, and some of the people went to Springfield, and when they came back expressed universal dissatisfaction. Of thirty-one car loads that started for Springfield, two-thirds went on to Cincinnati, not even stopping at Springfield. That was the spirit manifested in our county. The general feeling in the county I represent, I believe is in favor of a permanent location.

J. M. Daugherty, of Preble. For several years we moved our county fair about from place to place. For the last twelve years it has been located at Eaton, our county seat, and ever since the permanent location it has been in a successful condition. I think a like result would attend the permanent location of the State Fair at the capital.

My friend said if located here district fairs would spring up in other parts of the State. That thing has been talked of in our section, and we oppose it, but say if you don't locate the State Fair at Columbus we will establish a district fair. If you locate it here we will use our influence to make it interesting. The feeling in Preble county is for the location at Columbus. I live close to the State line between Ohio and Indiana. For the last three years the Indiana State Fair has been located permanently at Indianapolis. District fairs had commenced to spring up, but since the location of the State Fair there have stopped.

I think if the Board were represented by one member from each Con-

gressional District in the State it would insure the success of the State Fair. And if our State Fair were located permanently at Columbus I have no doubt that within ten years it would be an ornament not only to the State, but to the United States.

W. H. Gibson. I have said all I desire on this subject, except a remark in regard to the railroads. I am one of those who believe we will have a big fight with the railroads—that the farmers and people generally will have to grapple the stupendous corporation. And I would say in regard to this State Fair matter that if I could make the law I would not have one dime charged for carrying anything to the fair. Do you say we would have no constitutional right to that? Well, if we haven't that constitutional right, I would make such a constitutional right next summer at the Constitutional Convention. (Laughter and applause.) I mean just what I say. I hope the framers of that constitution will have sense enough to give back to the people the sovereign right they should exert over this and every institution in the State. And I tell you it will come. The farmers of the State are not going to be taxed \$120,000,000 annually, the one-half of which is downright stealings. They will fight their way out of these wrongs. But we have the constitutional power now to do this. They have found the way to bring Vanderbilt to time between Albany and Buffalo, and we can do it with Tom Scott. He is just like other men. It is true his is a stupendous corporation, but you are not going to scare me on that point.

J. W. Ross, of Wood. I have confidence in the integrity of the State Board for carrying out any arrangements of this kind, and think their judgment is fully as good as ours. For a number of years I have advocated a permanent location on some plan, and do not think you can find any speech of mine where I advocated the migratory plan. I have, however, long been of the opinion that a location at three or four points in the State would be much better than one. Suppose it was arranged to hold it at Cleveland, Columbus and Dayton; there would be a spirit of rivalry between them to see which could make it the greatest success. Of course the grounds would have to be free, and buildings all ready for occupancy, without any expense to the State Board.

A motion to adjourn was again made and lost.

The reading of the resolution was called for, but the original could not be found.

W. H. Gibson offered, as a substitute, the following:

Resolved, That it is the sense of this Convention that the State Fair should be permanently located at Columbus.

2. *Resolved*, That the State Board of Agriculture adopt the necessary measures to secure this object.

The substitute was accepted by Mr. Gage, the mover of the original motion.

The vote was taken by counties, a few minutes before 12 o'clock—about one-third of the members of the Convention having previously retired—and resulted in *twenty-three* votes in favor of the resolution to *twenty-eight* against it.

Upon motion, the Convention then adjourned.

Abstract of Report of Wm. B. McClung, Superintendent of the Ohio Agricultural and Mechanical College, to Hon. Valentine B. Horton, Chairman of the Board of Trustees.

Mr. McClung, under the appointment of the Board of Trustees, took charge of the Ohio Agricultural and Mechanical College Farm, January 1st, 1871. He states in his report, that the land constituting the farm is of excellent quality and beautifully situated for an "Experimental or Model Farm," but owing to the system of renting to which it had been subjected for a number of years, it had been so run down that it required quite a large amount of labor upon it before it could be made profitable or show to good advantage.

After taking possession of the farm and observing the condition of the fences, the entire lack of system in the arrangement of buildings, the want of barns, the pollution of the ground with weed seeds, and the great extent of land covered with second growth of timber and shrubs of different kinds, it was concluded that it would be useless to try any experiment in the way of growing crops or feeding animals, and decided to devote their entire energy to getting things in such condition that when the Board of Trustees may, through the Executive Committee, direct any experiments they desire to be made, they can be carried out properly with a detailed statement that will be both reliable and profitable for future reference. The aim in the expenditures made, has been to produce the greatest amount of income—consistent with the general improvement—in return for the labor performed.

The Superintendent states that but one opinion has been expressed by the numerous visitors to the farm during the past season—that being praise and admiration for the location and the general lay of the ground.

He next calls the attention of the Board of Trustees to the generosity of parties in making donations of implements for the use of the farm, thereby manifesting the deep interest they take in the success of the

enterprise. Messrs. Aultman, Miller & Co., Akron, presented one of their Combined Droppers, which was used during the entire harvest, doing its work in the best possible manner. The Moline Plow Company sent to the farm one of their Sulky Walking Plows, which though they had not yet an opportunity of testing, he had no doubt from a careful examination of the principles upon which it is constructed, will do its work in a creditable manner. The same company had also presented them a two horse loose ground plow, with which he was favorably impressed, but of the merits of which he could better judge after a practical trial. W. A. Nixon, manufacturer of reapers and mowers, Alliance, Ohio, had sent them one of his double shovel plows, constructed entirely of iron. The thanks of the Trustees are tendered, through the Superintendent, for the donations made by the various persons, and for the evidence of their sympathy in this work, and their desire for the success of the Ohio Agricultural and Mechanical College.

Appended to this report is a detailed statement of the receipts and expenditures for the improvements, &c., upon the farm.

Total value of the stock, farm implements, grains, &c., on hand.....	\$6,100 40
Total amount of expenditures, including \$595.62 of unpaid claims.....	4,854 63

Balance.....	\$1,246 77
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The statement of expenditures for different purposes are given as follows:

For growing crops, including labor, seed and food.....	\$866 37
5 horses.....	890 00
Wagons and harness.....	480 00
18 head of cattle.....	817 45
Clearing ground.....	200 00
Grading roads.....	75 00
Grading around the barn.....	50 00
Labor on the college ground proper, connected with the college building.....	100 00
700 locust posts.....	152 00
Agricultural implements.....	628 00
Total.....	\$4,259 01

OHIO STATE FAIR FOR 1871.

The Twenty-second Annual Ohio State Fair was held at Springfield, on Monday, Tuesday, Wednesday, Thursday and Friday, the 25th, 26th, 27th, 28th and 29th days of September, 1871, on the Clarke County Fair Grounds, under the following order of exhibition, and rules and regulations:

ORDER OF EXHIBITION.

The order of Exhibition will be as follows:

There will be no exhibition of Horses in the ring on Monday, for Premiums.

Tuesday, September 26th, the exhibition for premiums will commence.

The Committee in all the classes of live stock will be called at 10 o'clock A. M., at the President's Headquarters. Horses for general purposes, entered in Book 3, will be exhibited, commencing at one o'clock P. M. In the Cattle Ring, Devons and Herefords. In the Sheep Ring, Merino Sheep, and large breeds of Swine. Committees in the 2d, 3d, 4th, 5th and 6th Departments will be called at two o'clock P. M.

Wednesday, September 27th, 1871, exhibition of Draft Horses, entered in Book 4, will commence at 10 o'clock A. M., and will be followed by Roadsters. In the afternoon the Horses entered in Book 5 will be exhibited, viz: Saddle Horses, and Matched Horses and Mares. In the Cattle Ring, Work Oxen and Steers, Fat Cattle, Short Horn Bulls. In the Sheep Ring, all classes of Long Wool Sheep; Berkshire and small breeds of Swine.

The Committees are expected to be in the active discharge of their duties in all the Departments.

Thursday, September 28th, 1871, exhibition of Thoroughbred Horses will commence at 10 o'clock. The Trotters in Book 6 will exhibit in the afternoon. In the Cattle Ring, Short Horn Cows, Sweepstakes on Cattle, Southdown and Fat Sheep, and Sweepstakes on Swine.

Friday, September 29th, 1871, the exhibition of Draft Horses for the Sweepstake Premium will take place in the afternoon, followed by the General Sweepstakes Class of Horses and Mares. In the afternoon the Trotters and Sires for Sweepstakes will be exhibited.

In the Sheep Ring, Sweepstakes on Fine and Long Woolled Sheep.

ENTRIES AND TERMS.

Any person may enter as many different articles for exhibition as he or she may own, in any of the departments, free of charge; but no person will be permitted to exhibit articles which have been procured for that express purpose.

No Exhibitor's Tickets will be issued.

Each member of the awarding committees will be furnished with a badge, upon reporting to the member in charge of the department in which he is to serve.

Single tickets, twenty-five cents.

No carriages, or persons on horseback, admitted to the grounds.

RULES AND REGULATIONS.

I. Entries *must* specify the exhibitor's name, and the *name* and age of the animal offered.

No animal to be entered in the name of any other than the *bona fide* owner. Should any be entered otherwise, they will not be allowed to receive a premium, although awarded by the Judges.

An animal entered for exhibition in one class, cannot compete for a premium in any other, except in Roadsters and Sweepstakes, and as follows:

A single animal may be exhibited as one of a pair or herd.

Each horse will have the ring for trial to the satisfaction of the awarding committee.

Exhibitors are required to have their articles entered on the books, at the Secretary's office, before they are placed within the enclosure. On the entry of the articles or animals, cards will be furnished, with the number and class, as entered at the office, which are to be placed on the animal or article to be exhibited, and no others will be admitted on the grounds.

Exhibitors must *see to the delivery* of their articles upon the grounds, and to the *Superintendent of the appropriate Department*; and the Society cannot, in any case, make provision for their transportation, or be subjected to any expense therefor, either for their delivery at or return from the grounds; but all expenses connected therewith must, as heretofore, be provided *by the exhibitor*.

II. Persons intending to exhibit thoroughbred animals in the subdivision of Cattle or Horses, will be required to furnish a pedigree of the animals to be exhibited; the pedigrees to be delivered to the Secretary at the time of making the entry.

Evidence will be required that animals exhibited as *Breeders* are not barren. Breeding Cows must have produced a living calf within the two years last past.

No person other than the Judges will be permitted to go into the ring where stock is exhibited, except the officers of the Society or the Marshals.

No stock will be permitted to enter the ring unless under halter, and in care of a groom.

Horses, Cattle and Sheep will be exhibited in the ring prepared for the purpose, and the premium ribbons or cards attached by the Judges before leaving the enclosure. *First Premium—RED. Second Premium—BLUE.*

No animal or articles shall be removed before the close of the exhibition, without the permission of the President of the State Board, or member of the Board in charge of the Department in which the article is exhibited. Every exhibiter will be required to have his articles on the grounds, and arranged in their places by Tuesday, and if delayed beyond 12 o'clock M. of that day, *they cannot come in competition for premiums.*

The State Board will take every precaution in their power for the safe preservation of stock and articles on exhibition, *after* their arrival and arrangement upon the grounds, but will not be responsible for any loss or damage that may occur. Exhibitors are desired to give attention to their articles, and at the close of the Fair to attend to their removal.

FORAGE FOR STOCK.—For the convenience of exhibitors, hay and straw will be supplied upon the grounds without charge; provided, that if animals are entered for competition and not exhibited in the ring in the class in which they were entered, they shall be charged at the rate of *one dollar* per day.

Arrangements have been made with a responsible party to furnish oats and corn on the grounds at market prices, in quantities to suit purchasers.

GENERAL INSTRUCTIONS TO COMMITTEES.

The Committeemen are required to report themselves to the member in charge of the Department in which they are to serve, in order that they may be furnished with an appropriate insignia.

No person who is an exhibiter can act as Committeeman on the class in which he exhibits.

When articles or animals are not deemed worthy of a premium, the Committee will refuse to award a Premium.

No person will be allowed to interfere with the Committees during their adjudications; and any person who, by letter or otherwise, attempts such an interference, will be excluded from competition.

Committees will report the animals entitled to premiums only. Any animals, which, in their opinion, deserve a special commendation, will be so reported.

Purity of blood, as established by pedigree, symmetry, size, early maturity and general characteristics of the several breeds of animals, to be considered; and the Committees will make proper allowance for age, feeding, and other circumstances. Identity of color is not indispensable to Matched Horses.

If there be any question as to the regularity of any entry, or the right of any animal or article to compete in the class, the Committee shall report the same to the member in charge for adjustment.

The Committee on Fat Cattle will give particular attention to animals submitted for examination. It is believed that, all other things being equal, those are the best cattle that have the greatest weight in the smallest superficies. The Committee will require all the cattle in this class to be weighed, and will take measures to give the superficies of each of their reports. *They will also (before awarding the Premiums) require the competitors, full statements as to the manner and cost of feeding.*

REPORTS.

The Committees will be expected to give the *reasons for their decisions*, embracing the valuable and desirable qualities of the animals or articles to which the Premiums are awarded. And, as one great object of the Society is to collect valuable information upon subjects connected with Agriculture, the several awarding committees are requested to gather all the information possible from exhibitors, in their respective departments, and make their report as full as circumstances will permit.

They will make their reports of awards to the member in charge, as early as possible after making their awards.

A copy of the entry-book will be given to the chairman of the committee, so that he may write a full report, embracing the reasons upon which the awards were made, which shall be forwarded to the Corresponding Secretary within thirty days from the close of the Fair.

DISCRETIONARY PREMIUMS.

No awarding committees shall award any discretionary Premiums Whenever articles of superior merit are exhibited, for which no Premiums have been offered, the awarding committee may enter the same on the

book of awards, so that the Secretary may report the same to the Board for further action.

AWARDING COMMITTEES MUST NOT ATTACH PREMIUM CARDS TO THE ARTICLES FOR WHICH NO PREMIUMS ARE OFFERED. Awarding committees may attach **COMMENDED** cards to such articles as in their judgment deserve commendation; and make an entry of the same in the book.

PAYMENT OF PREMIUMS.

Premiums are payable in cash if desired, except where medals or diplomas are specified. The diplomas and medals will be delivered at the State Agricultural Rooms, in the State House in Columbus, as soon as they can be prepared or engraved, or will be forwarded, as directed, to the proper persons by the Secretary. Premiums will be paid by the Treasurer, only on the order of the President and Recording Secretary, and will be delivered by the Secretary, on application, at any time after the Fair. These orders must be endorsed by the party to whom they are made payable.

All premiums awarded must be claimed prior to the first of January, 1872, or they will be deemed forfeited.

In any case, a premium having been awarded upon any single animal or article of \$10 or upwards, it shall be optional with the exhibitor to receive either **SILVER PLATE**, suitably engraved, or the money.

STATEMENTS TO BE FURNISHED BY APPLICANTS FOR PREMIUMS ON FARM CROPS.

1. The land shall be measured by some competent person, who shall make affidavit of the accuracy of the measurement, and the quantity of ground.

2. The applicant shall make affidavit according to the forms annexed, to the quantity of grain raised on the ground, entered on the premium list, which affidavit must accompany the application for premiums, together with a sample of the grain.

The main object of the Society being to promote profitable cultivation, it does not propose to offer premiums for crops produced by extravagant expenditure; therefore a detailed, certified account of the expense of cultivation must be made. The expense of labor and manure should be particularly stated, and the kind of manure used. The statement must be in the following form:

To — loads manure at \$ — per load	\$ —
To — days plowing, at \$ — per day	\$ —
To — days labor, at \$ — per day	\$ —
To — days harvesting, \$ — per day	\$ —
To — days marketing	\$ —

And thus each item of expense incurred in the cultivation and marketing of the various crops, upon which premiums are applied for, must be fully stated.

The kind and condition of the soil ; the quantity and kind of seed used ; the time and mode of putting it in the ground, should be particularly stated.

Samples of grain and vegetables produced, to be exhibited at the State Fair where practicable, and also to be sent to the rooms of the Board at the January meeting.

3. All the grain grown on the entire piece of land measured, must be either all weighed or measured ; *and not the product of a square rod or two weighed, and the remainder guessed at.*

FORMS OF AFFIDAVITS.

— County, ss.—A. B., being duly sworn, says he accurately measured the land upon which C. D., raised a crop of — the past season, and the quantity of land is — acres and no more.

Sworn to before me, this — day of —, 1871.

— —, Justice.

— County ss.—C. D., being duly sworn, says that he raised a crop — the past season, upon the land measured by A. B., and the quantity of grain raised thereon was — bushels, and no more weighed, (or measured in a sealed half bushel, as the case may be,) and that the statements in regard to the manner of cultivation, etc., are correct to the best of his knowledge.

Sworn before me, this — day of —, 1871.

— —, Justice.

CLASSIFICATION.

First Department—LIVE STOCK.

Second Department—MACHINERY, IMPLEMENTS, ETC.

Third Department—MECHANICS' AND MANUFACTURERS' PRODUCTS.

Fourth Department—TEXTILE FABRICS AND DOMESTIC MANUFACTURERS.

Fifth Department—FARM AND HORTICULTURAL PRODUCTS.

Sixth Department—FLOWERS AND FINE ARTS.

During the Fair, these departments will be under the general charge of the following members of the Board, viz.:

Horses	L. G. DELANO, Chillicothe.
Cattle	L. B. SPRAGUE, Springfield.
Sheep, Swine and Poultry	JAMES B. JAMISON, Cadiz.
Machinery, Implements, etc.....	WM. B. MCCLUNG, Columbus.

Mechanics and Manufactures	R. P. CANNON, Aurora.
Textile Fabrics and Domestic Munu'frs.....	S. HARMOUNT, Canal Dover.
Farm and Horticultural	D. C. RICHMOND, Sandusky City.
Flowers and Fine Arts	J. A. WARDER, Cincinnati.

The following gentlemen will act as Superintendents in the respective Departments, under the general direction of the members in charge.

Horses	CAPT. GEO. ST. CLAIR, Milford Center.
Cattle	W. B. MCPHERSON, Xenia.
Sheep and Swine.....	HENRY BOYLES, Cadiz.
Poultry	N. A. HANNA, Cadiz.
Machinery.....	CHARLES SMITH, Marion.
Manufactures and Mechanical.....	P. R. HIGLEY, Windham.
Domestic and Textile Fabrics.....	UPTON C. DEARDORFF, Canal Dover.
Farm Products.....	HENRY MILNER.
Fruits	GEORGE POWERS, Perrysburg.
Flowers and Fine Arts	LEO WELTZ, Wilmington.

LIST OF ENTRIES AND AWARDS.

FIRST DEPARTMENT.

ENTRIES OF THOROUGHBRED HORSES.

T. Creighton, London, Ohio, stallion, 3 years and under 4.
 C. M. Poor, Springdale, Ohio, stallion, 4 years and over, "Ringmaster."
 Adam Colvin, Springfield, Ohio, mare, 4 years and over.
 " " stallion, 4 years and over, "Bonny Scotland."
 L. B. Sprague, " mare, 2 years and under 3, "Fanny Johnson."
 " " filly, 1 year and under 2 "Ida May."
 " " stallion, 1 year and under 2, "Lagonda."
 W. H. Nance, Paris, Ky., stallion, 3 years and under 4, "Hampton."
 C. Paullus, Dayton, Ohio, mare, 4 years and over, "Lady Emma."
 Stephen F. Deems, Columbus, Ohio, mare, 4 years and over, "Julia."
 " " stallion, 2 years and under 3, "Time."
 " " " " "Partisan."
 O. P. Chaney, Canal Winchester, mare, 4 years and over, "Emily Peyton."
 John Reber, Lancaster, Ohio, stallion, 4 years and over, "Hurrah."
 " " " 1 year and under 2.
 " " sucking stallion.
 " " mare with foal, "Young Fashion."
 B. G. Smythe, Newark, Ohio, stallion, 4 years and over, "Woodstock."
 O. H. D. Wood, Newark, Ohio, mare, 2 years and under 3, "Maid Marion."
 B. D. Anderson, Xenia, Ohio, stallion, 3 years and under 4, "Young Ben Butler."
 " " mare, 4 years and over, "Blanche Butler."
 M. Timmins, Xenia, Ohio, stallion, 4 years and over, "Young Scythian."

AWARDS ON THOROUGHBREDS.

John Reber, Lancaster, best stallion 4 years and over.....	\$60
C. M. Poor, Springdale, 2d best	30
B. D. Anderson, Xenia, best stallion 3 years and under 4.....	30
W. H. Nance, Paris, Ky., 2d best	20
Stephen F. Deems, Columbus, best stallion 2 years and under 3	25
" " 2d best	15
John Reber, Lancaster, best stallion 1 year and under 2.....	20
L. B. Sprague, Springfield, 2d best.....	15

John Reber, Lancaster, best sucking stallion colt.....	15
2d best.....	No award.
O. P. Chaney, Canal Winchester, best mare 4 years and over.....	40
Stephen F. Deems, Columbus, 2d best	25
Best mare 3 years and under 4.....	No award.
2d best.....	No award.
O. H. Wood, Newark, best mare 2 years and under 3.....	20
L. B. Sprague, Springfield, 2d best.....	15
“ “ best filly 1 year and under 2.....	15
2d best.....	No award.
Best sucking filly.....	No award.
2d best.....	No award.
John Reber, Lancaster, best brood mare, with foal by side.....	40
2d best.....	No award.

AWARDING COMMITTEE.—A. Waddle, South Charleston ; John M. Millikin, Hamilton
Lafayette La Boiteaux, Cincinnati.

ENTRIES OF ROADSTERS.

E. B. Cassilly, Springfield, mare, 4 years and over.	
“ “ brood mare, with foal by side.	
Wm. H. Crane, Tippecanoe City, mare, 4 years and over “ Mollie.”	
“ “ “ “ “ Belle.”	
“ “ “ 3 years and under 4, “ May of Mohawk.”	
L. D. Campbell, Hamilton, stallion, 4 years and over.	
John Wylie, Cadiz, mare, 3 years and under 4, “ Minnie Hawthorne.”	
B. P. Bond, Brandt, mare, 4 years and over.	
N. M. Runyan, Marion, mare, 4 years and over, “ Ohio Girl.”	
“ “ “ “ “ Queen.”	
E. R. McClintick, Springfield, stallion, 4 years and over, “ Gilbert.”	
Wm. A. Wright, Logan “ “ “ Messenger.”	
C. T. Adams, Springfield, stallion, 2 years and under 3, “ Charlie.”	
Adam Colvin “ mare, 2 years and under 3.	
Dr. Bryant “ stallion, 2 years and under 3, “ Lexington.”	
W. Ward “ “ 4 years and over, “ Dan.”	
George Altz, “ mare “	
John Monahan “ stallion “	
“ “ “ 2 years and under 3.	
“ “ “ “	
Wm. R. Burnett “ mare “	
Frank Gillett “ “ 3 years and under 4.	
J. F. Barringer “ “ 4 years and over.	
Jas. Meenach “ “ 2 years and under 3.	
E. B. Cassilly “ brood mare, with foal by side.	
J. H. Barringer “ stallion, 4 years and over, “ Young Independence.	
G. W. Bouvier “ “ 3 years and under 4, “ Young Mohawk.”	
A. Johnson, Clifton, mare, 3 years and under 4.	

- Perry Snyder, Alpha, stallion, 4 years and over, "Whitehall."
 J. & R. Cook, Franklin " " " " "Jim Clay."
 Jas. Clark, New Moorefield, stallion, 4 years and over, "Mohawk, Jr."
 J. D. Clark " mare " " "Ida May."
 Jas. Reed, Springfield, mare, 3 years and under 4, "Mollie."
 J. Maxwell, New Moorefield, brood mare, with foal by side, "Jennie Jinks."
 Jas. Willoughby " " " " "Dollie."
 J. P. Mumma, Dayton, mare, 2 years and under 3, "Anna Bell."
 D. McMillan, Xenia, stallion, 2 years and under 3, "Margrave."
 Jno. Rapp, Springfield, stallion, 3 years and under 4, "Charlie."
 W. A. Neil, London, stallion, 1 year and under 2, "Spartan, Jr."
 Frank Mitchell, London, mare, 1 year and under 2.
 R. R. Carpenter, Tippecanoe City, mare, 3 years and under 4, "Western Maid."
 Albert Booce, West Lancaster, brood mare, with foal by side.
 Seth Griffin, Elyria, stallion, 3 years and under 4, "Young Sir Henry."
 " " mare, 2 years and under 3.
 " " stallion, 4 years and over, "Ohio Hero."
 Thos. Titus, Springfield, mare, with foal.
 Ed. Brock, Xenia, stallion, 4 years and over, "Boston."
 D. O. Heiskell, South Charleston, mare, 2 years and under 3.
 Thos. Ballard, Mason, stallion, 3 years and under 4, "Pilot."
 J. C. Crain, Cedarville, mare, 3 years and under 4.
 J. H. Millinger, Springfield, mare, 3 years and under 4.
 Weaver & Wellwood, Fremont, stallion, 4 years and over, "Frank."
 " " " 3 years and under 4, "Frank Sloan."
 Frank Sloan, Mechanicsburg " 2 years and under 3, "Black Boy."
 J. P. Weaver, Fremont, mare, 3 years and under 4, "Fanny Weaver."
 H. M. Burnham, Mechanicsburg, mare, 2 years and under 3.
 Jno. Barnhart, Marion, stallion, 4 years and over, "Sam Patch."
 Ezra Bond, Brandt, stallion, 2 years and under 3, "Dan."
 Oskamp & Wade, Miamiville, mare, 4 years and over, "Ohio Girl."
 Jas. Alexander, Columbus, stallion, 4 years and over, "Dick Sliter."
 J. W. McCann, Hilliard, stallion, 3 years and under 4, "Dudley."
 D. O. Heiskell, South Charleston, 4 years and over, stallion, "Whip Clay."
 D. Mason, Xenia, mare, 4 years and over, "Lady Suffolk."
 Musser & Bro, Lancaster, stallion, 4 years and over, "Marksman."
 W. A. Neil, London, mare, 4 years and over.
 H. L. Eckels, Cardington, mare, 4 years and over, "Flora."
 C. C. Dills, Dayton " " " " "Kitty."
 Solomon Ramsey, Centreville, stallion, 4 years and over.
 " " " 3 years and under 4.
 Geo. W. Williams, Columbus, mare, 3 years and under 4, "Belle of Hamilton."
 C. S. Herr, Shadesville, stallion, 3 years and under 4, "Membrino Thorn."
 Geo. Blackmore, Bloomingburg, mare, 4 years and over, "Jennie."
 B. D. Anderson, Xenia, , stallion, 3 years and under 4, "Young Ben Butler."
 Paul Shinn, Selma, mare, 3 years and under 4, "Jessie."
 Allen Job, Yellow Springs, stallion, 6 years old, "Blucher."
 M. Timmons, Xenia, stallion, 4 years and over, "Young Scythian."

AWARDS ON ROADSTERS..

John Clark, New Moorefield, best stallion, 4 years and over	\$50
John Monahan, Springfield, 2d best	25
C. S. Kerr, Shadesville, best stallion, 3 years and under 4	30
Thos. Ballard, Mason, 2d best	15
John Mohahan, Springfield, best stallion, 2 years and under 3	20
“ “ 2d best	15
J. D. Clark, New Moorefield, best mare, 4 years and over	40
E. B. Cassilly, Springfield, 2d best	20
Frank Gillett, Springfield, best mare, 3 years and under 4	25
James Reed, Springfield, 2d best	20
D. O. Heiskill, South Charleston, best mare, 2 years and under 3	20
J. W. Maxwell, New Moorefield, best brood mare with foal	40
Jas. Willoughby, New Moorefield, 2d best	20

AWARDING COMMITTEE.—Josiah Koller, Bucyrus ; S. S. McCully, Crestline ; Jeff. Van Horne, Zanesville.

ENTRIES OF HORSES FOR GENERAL PURPOSES.

J. Rakestraw, Clifton, stallion, 4 years and over, “Commodore Perry.”	
E. R. McClintick, Springfield, “ “ “Gilbert.”	
Wm. A. Wright, Logan, “ “ “Messenger.”	
Ed. Brock, Xenia, “ “	
Jas. Meenach, Springfield, “ “	
J. C. Gemmill, “ “ “Cruiser, Jr.”	
J. H. Skinner, Palestine, “ “ “Benecia Boy.”	
John Maller, Dayton, “ “ “White Hall, Jr.”	
Greenleaf & Watson, London, “ “ “Membrino Thorn.”	
J. B. Mahan, Allen's, “ 3 years and under 4, “Larkin.”	
Jno. Rapp, Springfield, “ “ “Charley.”	
J. R. Hershner, Springfield, stallion, 2 years and under 3.	
Ezra Bond, Brandt, “ “	
Simon Perceel, Sandusky, “ “	
C. T. Adams, Springfield, “ “	
Henry Spray, New Burlington, “ “ “Ben.”	
Daniel Stout, Delaware, “ “ “Granite.”	
Robt. McMillan, Cedarville, “ “	
David Martin, Plain City, “ “	
J. Rakestraw, Clifton, “ “ “Commodore Perry.”	
Sam'l Mock, New Carlisle, “ 1 year and under 2.	
Lemuel Dyer, Bloomingburg, “ “	
James Meenach, Springfield, “ “	
R. Burrows, Xenia, “ “	
Alva Smith, Plain City, “ “	
B. G. Purgit, Mechanicsburg, “ “	
T. V. Crabill, Springfield, sucking stallion colt.	
Wm. A. Wright, Logan, “ “ “Hocking.”	

J. Maxwell, New Moorefield, sucking stallion colt.		
J. T. Knight, Urbana,	"	"
Albert Booce, W. Lancaster,	"	"
Thos. Titus, Springfield,	"	" "Highland Fling."
J. F. Harrison, Springfield, mare, 4 years and over.		
Jas. Rawlings, Urbana,	"	"
B. P. Bond, Brandt,	"	"
Jno. F. Harrison, Springfield,	"	" "Fanny."
L. B. Sprague,	"	"
Jas. Meenach,	"	"
B. W. Bell, Sunbury,	"	" "Queen."
Greenleaf & Watson, London,	"	" "Mountain Maid,"
G. Farrington, Mechanicsburg,	"	"
Alex. Townsley, Cedarville,	"	" "Lize."
John Wylie, Cadiz, mare, 3 years and under 4.		
D. W. Rawlings, Urbana,	"	"
"	"	"
James Meenach, Springfield,	"	"
A. Johnson, Clifton, mare, 3 years and under 4.		
D. B. Stansel, Centreville, mare, 3 years and under four, "Topsey."		
J. W. McCame, Hilliard,	"	" "Emily."
J. T. Garlough, Springfield,	"	"
J. C. Fuller, New Carlisle,	"	" 2 years and under 3.
J. P. Mumma, Dayton,	"	"
Philip Sutton, Yellow Springs, mare, 2 years and under 3.		
Jos. McAfee, Cedarville,	"	"
Jas. Willoughby, New Moorefield, filly, 1 year and under 2.		
J. T. Maxwell,	"	"
Jas. Hollingshead, Xenia,	"	"
T. Titus, Springfield,	"	"
E. B. Casselly, Springfield, sucking filly.		
Jos. McAfee, Cedarville,	"	"
Ed. Spencer,	"	"
T. V. Crabill, Springfield, brood mare, with foal by her side.		
Wm. A. Wright, Logan,	"	" "Fannie Clay."
Jas. Willoughby, New Moorefield,	"	" "Dollie."
J. Maxwell,	"	" "Jennie Jinks."
J. Knight, Urbana,	"	"
Jos. McAfee, Cedarville,	"	"
T. Titus, Springfield,	"	"
Ed. Spencer, Cedarville,	"	"

AWARDS ON HORSES FOR GENERAL PURPOSES.

James Meenach, Springfield, best stallion 4 years and over	\$50
Greenleaf & Watson, London 2d best.....	25
J. B. Mahan, Allens, best stallion 3 years and under 4,	30
2d best	No award.
J. Rakestraw, Clifton, best stallion 2 years and under 3.....	20
J. R. Kerahnner, Springfield, 2d best.....	10

B. G. Purget, Mechanicsburg, best stallion 1 year and under 2.....	\$15
Alva Smith, Plain City 2d best.....	10
Albert Booco, W. Lancaster, best sucking colt	15
J. T. Knight, Urbana 2d best	10
Greenleaf & Watson, London, best mare 4 years and over	30
B. P. Bond, Brant, 2d best.....	15
D. B. Stancel, Centerville, best mare 3 years and under 4.....	20
D. W. Rawlings, Urbana 2d best.....	15
Phillip Sutton, Yellow Springs, best mare 2 years and under 3	15
Jas. McAfee, Cedarville, 2d best.....	10
J. T. Maxwell, New Morefield, best filly 1 year and under 2	15
Jas. Willoughby New Morefield, 2d best	10
Jas. McAfee, Cedarville, best sucking filly.....	15
E. B. Cassily, Springfield 2d best	10
J. W. Maxwell, New Morefield, best brood mare with foal by side	40
Jas. McAfee, Cedarville, 2d best.....	20

AWARDING COMMITTEE.—J. Monahan, Springfield; S. Baughman, Wadsworth; O. P. Chaney, Canal Winchester; L. Vorhees, Kennon P. O.; Wm. Allen Neil, London.

ENTRIES OF DRAFT HORSES.

James E. Yeazle and H. Weaver, Springfield, stallion, 3 years and under 4.	
J. E. Yeazle,	“ mare, 4 years and over.
James Whitely,	“ stallion, 2 years and under 3.
“	“ mare, 4 years and over.
“	“ filly, 1 year and under 2.
J. G. Smith, Cedarville, mare, 4 years and over, “Lottie.”	
John R. Gray, Mingo, stallion, 1 year and under 2, “Colonel.”	
“	“ mare, 2 years and under 3, “Victory Belle.”
“	“ mare, 4 years and over, “Lady Elgin.”
Thomas Stillings, Milford Centre, mare, 4 years and over, “Mollie.”	
“	“ mare, 3 years and under 4, “Nellie.”
“	“ sucking filly.
“	“ brood mare, foal by her side
Thomas Jones, Darby Creek, brood mare, foal by her side.	
“	“ stallion, 4 years and over.
“	“ mare, 3 years and under 4.
“	“ filly, 1 year and under 2.
“	“ sucking filly.
J. C. Stevens, Kenton, filly, 1 year and under 2, “Flora Belle.”	
W. C. Gemmull, Springfield, stallion, 4 years, “English Clyde.”	
James Willoughby, New Morefield, mare, 4 years and over, “Jane.”	
Louis Yates, Catawba, mare, 4 years and over, “Dale.”	
“	“ filly, 1 year and under 2, “Dollie.”
Henry Carman, Casstown, stallion, 2 years old.	
Andrew Nicholson, Plattsburg, sucking stallion.	
“	brood mare, with foal by her side.

Jacob Shroyer, Tippecanoe, brood mare, with foal by her side, "Nell."
 " " sucking stallion colt.
 D. McMillan & Co., Xenia, stallion, 4 years and over, "Phil Sheridan."
 George Smaltz, " filly, 1 year and under 2.
 Arnold Reid, " "
 James Hollingshead " "
 J. K. Laughead, " stallion, 1 year and under 2, "General Grant."
 R Burrows, " "
 Isaiah Fross, Donaldsville, stallion, 2 years and under 3, "Young Grant."
 J. T. Hannaberry, Selma, mare, 1 year and under 2.
 Jacob E. Davis, Dublin, stallion, 1 year and under 2, "Belgian."
 J. S. Smart, Jerome, mare, 2 years and under 3.
 L. Dyer, Bloomingburg, stallion, 1 year and under 2.
 Charles McMullin, Irwin, mare, with foal by her side.
 " " sucking filly.
 Robert Bickett, Plain City, stallion, 3 years and under 4, "Selim."
 Samuel Taylor, " stallion, 1 year and under 2.
 John Domeny, Canaan, "
 Samuel Taylor, Plain City, filly, 1 year and under 2.
 B. W. Bell, Sunbury, sucking filly.
 " " stallion, 1 year and under 2, "Prince William."
 H. C. & C. W. Guy & Co., Mechanicsburg, stallion, 4 years and over, "Prince Alfred."
 " " " " "Emperor."
 John Barnhart, Marion, stallion, 4 years and over, "Canadian Chieftain."
 John Whitely, Kenton, mare, 4 years and over, "Nellie Gray."
 Samuel Mock, New Carlisle, stallion, 1 year and under 2, "Napoleon."
 Stanley and Wilson, Chillicothe, stallion, 2 years and under 3.
 B. F. Garlough, Springfield, mare, with foal.
 " " filly, 1 year and under 2.
 " " sucking stallion.
 George W. Rebman, Olivesburg, stallion, 4 years and over, "Cheshire."
 Alexander Townsley, Cedarville, stallion, 2 years and under 3, "Jack."
 " " mare, 2 years and under 3, "Belle."
 John Reber, Lancaster, stallion, 4 years and over, "Shakespeare."
 " " " " "George 3d."
 " " stallion, 2 years and under 3, "Edinburgh."
 " " " " "Glasgow."
 John Q. Hackenberg, Springfield, sucking filly.
 George Sinclair, Milford Center, sucking stallion.
 " " mare, 4 years and over.
 " " mare, 3 years and under 4.
 " " filly, 1 year and under 2.
 " " mare, with foal.
 " " sucking stallion.

AWARDS ON DRAFT HORSES.

D. McMillan & Co., Xenia, best stallion 4 years and over.....\$50
 H. C. & C. W. Guy, Mechanicsburg, 2d best..... 25
 James E. Yeazel and H. Weaver, Springfield, best stallion 3 years and under 4. 25

Robert Bickett, Plain City, 2d best.....	\$15
John Reber, Lancaster, best stallion 2 years and under 3.....	15
“ “ 2d best	10
L. Dyer, Bloomingburg, best stallion 1 year and under 2.....	10
Jacob E. Davis, Dublin, 2d best.....	5
Andrew Nicholson, Plattsburg, best sucking stallion colt.....	10
George Sinclair, Milford Center, 2d best	5
John R. Gray, Mingo, best mare 4 years and over.....	30
J. E. Yeazel, Springfield, 2d best	20
George Sinclair, Milford Center, best mare 3 years and under 4	20
Thomas Jones, Darby Creek, 2d best	15
J. S. Smart, Jerome, best mare 2 years and under 3.....	15
John R. Gray, Mingo, 2d best	10
Louis Yates, Catawba, best filly 1 year and under 2	10
J. C. Stevens, Kenton, 2d best.....	5
James McMullen, Irwin, best sucking filly.....	10
B. W. Bell, Sunbury, 2d best.....	5
George Sinclair, Milford Center, best brood mare with foal by side.....	40
Thomas Jones, Darby Creek, 2d best	20

AWARDING COMMITTEE—John C. Jamison, Cadiz; V. L. Decker, Lockbourne; E. M. Williams, Columbus.

ENTRIES OF MATCHED HORSES AND MARES; GELDINGS AND MARES FOR HARNESS; SADDLE HORSES.

G. W. Yeazel, Springfield, gelding for saddle.
 E. B. Cassilly, Springfield, mare for light harness.
 Jno. D. Kirkpatrick, Urbana, Ohio, gelding for light harness, 4 years.
 J. S. Thomas, Springfield, saddle mare.
 O. J. Wright & Son, Waynesville, saddle gelding.
 Wm. M. Ramsey, Cadiz, stallion for saddle, “Hiatoga, Jr.”
 Thos. Stillings, Milford Centre, pair draft mares.
 O. J. Wright & Son, Waynesville, gelding for light harness.
 J. B. Mahan, Allen, gelding for saddle.
 D. W. Rawlings, Urbana, pair farm or draft mares.
 B. P. Bond, Brandt, pair matched roadsters.
 “ “ gelding for saddle.
 N. M. Runyan, Marion, mare for light harness, “Queen.”
 J. T. Norris, Springfield, gelding for saddle.
 B. P. Bond, Brandt, gelding for light harness.
 Wm. A. Wright, Logan, mare for light harness, “Kate Fisher.”
 D. A. McNair, Xenia, matched roadsters.
 J. E. Yeazel, Springfield, gelding for light harness.
 Adam Colvin, “ mare “
 Cyrus Driscoll, “ “ “
 — Myer, “ gelding “
 John Ripsum, “ mare “

- Peter Prince, Springfield, mare for light harness.
 F. Sultzbaugh, " gelding "
 R. Flowers, " mare "
 D. S. Shields, Paddy's Run, mare for saddle.
 A. Moorehouse, Springfield, pair matched coach mares.
 Jno. Linn, " gelding for light harness.
 J. F. Gregg, Jeffersonville, pair matched coach geldings.
 " " gelding for light harness.
 " " "
 Perry Snyder, Alpha, pair matched roadsters.
 " gelding for light harness.
 R. & J. Cook, Franklin, stallion for saddle, "Jim Clay."
 Adam Garlough, Alpha, gelding for light harness.
 Jas. Willoughby, New Morefield, pair farm or draft mares.
 J. D. Clark, " gelding for saddle.
 " " mare for light harness, "Ida May."
 George Horr, New Carlisle, pair coach horses.
 John M. Shroyer, Tippecanoe, gelding for light harness.
 W. A. Neal, London, pair matched roadsters, mares.
 Frank Mitchell, " coach geldings.
 Allen Job, Yellow Springs, stallion for saddle, "Blucher."
 Philip Sutton, " gelding for saddle.
 G. W. Turner, Springfield, "
 D. B. Stansel, Centerville, gelding for light harness, "Sam."
 S. S. Wolf, Springfield, mare "
 J. Bacon, Springfield, pair matched roadsters.
 H. L. Eckels, Cardington, "
 R. M. Huffman, Springfield, gelding for light harness.
 Seth Griffin, Elyria, pair coach geldings, "Lake Erie" and mate.
 " pair matched roadsters, "Budd Doble" and "Mark Twain."
 Chas. M. Clark, Springfield, pair coach geldings.
 D. O. Heiskell, South Charleston, pair matched roadsters.
 " " gelding for light harness.
 W. C. Gray, Piqua, mare for saddle, "Maggie."
 Greenleaf & Watson, London, mare for light harness, "Patsey."
 " " gelding " "London."
 K. S. Cecil, Casstown, " " "Doe."
 H. Shroyer, Tippecanoe, " " "Bill."
 Jno. Barnhart, Marion, stallion for saddle, "Sam Patch."
 J. Redmond, Springfield, gelding for light harness, "Frank."
 P. T. Sayers, Troy, " " "Mohawk."
 W. C. Brown, Columbus, " " "Milton Day."
 E. M. Stroder, " " "Red Oak."
 A. N. Brooks, Springfield, pair coach geldings.
 S. Farrington, Mechanicsburg, "
 M. Bowerman, Hamilton, gelding for light harness, "Custard."
 Wm. Taylor, Xenia, " " "Clay Prince."
 D. Mason, " mare, " "Lady Suffolk."
 Wm. Neil, London, saddle stallion, "Spartan."

J. M. Forgy, Midway, gelding for light harness.
 A. O. Bond, Dayton, " "
 H. L. Eckels, Cardington, mare " "Flora."
 C. C. Dills, Dayton, matched roadsters.
 C. H. Wilson, Yellow Springs, gelding for saddle.
 W. P. Crozier, Piqua, gelding for light harness.
 Geo. Sinclair, Milford Centre, pair of farm or draft geldings.
 A. Robins, Casttown, gelding for light harness.
 Adam Colvin, Springfield, mare for light harness.
 W. M. Edwards, Cleveland, matched roadsters.
 " " gelding for light harness.
 " " mare "
 G. M. Clevinger, West Newton, matched roadsters.
 J. R. Woodward, Tippecanoe City, coach geldings.
 Sam'l Baker, Jamestown, saddle gelding, "Frank."
 Thos. McGee, Washington C. H., matched roadsters.
 C. C. Dills, Dayton, matched coach mares.

AWARDS ON MATCHED HORSES AND MARES.

Seth Griffin, Elyria, best pair coach geldings or mares.....	\$40
C. C. Dills, Dayton, 2d best	20
D. W. Rawlings, Urbana, best pair of farm or draft geldings or mares.....	40
Geo. Sinclair, Milford Center, 2d best.....	20
W. M. Edwards, Cleveland, best pair matched roadsters.....	40
D. O. Heiskill, South Charleston, 2d best.....	20

AWARDS ON GELDINGS AND MARES FOR HARNESS.

W. M. Edwards, Cleveland, best gelding for light harness.....	\$50
D. O. Heiskill, South Charleston, 2d best	25
W. M. Edwards, Cleveland, best mare for light harness.....	50
Greenleaf & Watson, London, 2d best	25

AWARDS ON SADDLE HORSES.

Wm. Neil, London, best stallion for saddle.....	\$40
D. S. Shields, Paddy's Run, best mare or gelding for saddle.....	40
J. D. Clark, New Morefield, 2d best.....	20

AWARDING COMMITTEE.—L. Vorhees, Kennon P. O.; A. W. Seymour, Bainbridge;
 S. Baughman, Wadsworth.

ENTRIES OF TROTTERS.

E. B. Cassilly, Springfield, trotting mare.
 A. F. Shaffer, Springfield, trotting gelding, "Warrior, Jr."
 N. M. Runyan, Marion, trotting mare, "Ohio Girl."
 John McGarr, Springfield, trotting mare.
 John Monahan, Springfield, trotting stallion.
 J. H. Barringer, Springfield, trotting stallion, "Young Independence."

R. Cook, Franklin, trotting gelding, "Joe Hooker."
 J. D. Clark, New Morefield, trotting mare, "Ida May."
 T. McKinney, Springfield, trotting gelding, "Charlie."
 Seth Griffin, Elyria, trotting stallion, "Ohio Hero."
 Thos. Ballard, Mason, trotting gelding, "Nameless."
 Oskamp & Wade, Miamiville, trotting mare, "Ohio Girl."
 D. O. Heiskell, South Charleston, trotting stallion, "Whip Clay."
 " " " gelding, "Champion."
 M. Bowerman, Hamilton, trotting gelding, "Custard."
 L. D. Campbell, Hamilton, trotting stallion, "Col. Ellsworth."
 Musser & Bro., Lancaster, trotting stallion, "Marksman."
 W. M. Edwards, Cleveland, trotting gelding, "Victor."
 " " " mare.
 A. O. Bond, Dayton, trotting gelding.
 P. R. Carroll, Xenia, trotting mare, "Gray Lady."
 W. A. Whiteside, Clifton, trotting mare, "Julia."

AWARDS ON TROTTERS.

Musser & Bro., Lancaster, best and fastest trotting stallion.....	\$75
L. D. Campbell, Hamilton, 2d best.....	25
Oskamp & Wade, Miamiville, best and fastest trotting mare.....	75
J. D. Clark, New Morefield, 2d best.....	25
A. O. Bond, Dayton, best and fastest trotting gelding.....	50
T. McKinney, Springfield, 2d best.....	25

AWARDING COMMITTEE—George W. Gregg, Circleville; W. C. Brown, Columbus; John Reber, Lancaster.

ENTRIES OF SWEEPSTAKES.

J. Rakestraw, Clifton, stallion, of any age, "Commodore Perry," 29 months old.
 T. Creighton, London, stallion of any age.
 Samuel Mock, New Carlisle, stallion of any age other than draft.
 Jas. Whitely, Springfield, draft mare, any age.
 L. D. Campbell, Hamilton, best and fastest trotting horse, mare or gelding.
 " " best stallion of any age or breed other than draft.
 John R. Gray, Mingo, draft mare, any age.
 D. M. Frazer, Cadiz, stallion, draft, any age, "Frank."
 Thomas Stillings, Milford Centre, draft mare, any age.
 " " " "
 " " " "
 Thomas Jones, Darby Creek, " "
 " " " "
 " " draft stallion, any age.
 J. B. Mahan, Allens, stallion, any age or class other than draft, "Larkin."
 D. W. Rawlings, Urbana, mare, any age or class other than draft.
 " " " " "
 Jas. Rawlings, " " " "
 N. M. Runyan, Marion, best and fastest trotting mare, "Ohio Girl."

- N. M. Runyan, Marion, mare, any age or class other than draft, "Queen."
 J. C. Stevens, Kenton, draft mare, any age, "Flora Bell."
 C. M. Poor, Springdale, stallion, any age or breed other than draft, "Ringmaster."
 John F. Harrison, Springfield, mare, any breed other than draft, "Fanny."
 Wm. M. Ramsey, Cadiz, stallion, other than draft, "Histoga, jr."
 J. E. Yeazel, Springfield, draft mare.
 C. T. Adams, Springfield, stallion, other than draft, "Charlie."
 J. C. Fuller, New Carlisle, mare, any age or breed other than draft.
 Jas. Meenach, Springfield, stallion, " " "
 W. C. Gemnull, " " " " "
 J. H. Barringer, " " " " "
 J. H. Skinner, Palestine, " " " " "Benicia Boy."
 Jas. Willoughby, New Morefield, draft mare, "Jane."
 Louis Yates, Catawba, draft mare, "Dale."
 Louis Yates, Catawba, draft mare, "Dollie."
 J. D. Clark, New Morefield, mare, other than draft, "Ida May."
 Jas. Clark, New Morefield, stallion, other than draft, "Mohawk, jr."
 Jas. Clark, New Morefield, trotting horse, mare or gelding, "Mohawk, jr."
 T. McKinney, Springfield, trotting gelding, "Charlie."
 D. McMillan & Co., Xenia, stallion, 5 his colts (draft) 1 year old.
 D. McMillan & Co., Xenia, stallion, draft.
 David Martin, Plain City, stallion, draft, "Belgium Boy."
 David Martin, Plain City, stallion, draft, with 5 colts, "Belgium Boy."
 Seth Griffin, Elyria, roadster, stallion, with 5 colts, "Ohio Hero."
 Daniel Stout, Delaware, stallion, other than draft, "Granite."
 Ed. Brook, Xenia, stallion, other than draft, "Boston."
 L. Dyer, Bloomingburg, draft stallion.
 W. C. Gray, Piqua, mare, other than draft "Maggie."
 Greenleaf & Watson, London, trotting mare, "Patsy."
 H. C. & C. W. Guy & Co., Mechanicsburg, draft stallion, "Prince Alfred."
 " " " " "Emperor."
 John Barnhart, Marion, stallion, other than draft, "Sam Patch."
 " " draft stallion, "Canadian Chieftain."
 Jno. Whitley, Kenton, draft mare, "Nellie Gray."
 Stanly & Wilson, Chillicothe, draft stallion.
 Oakamp & Wade, Miamisville, trotting mare, "Ohio Girl."
 Jas. Alexander, Columbus, trotting gelding, "Drift."
 S. McCann, Hilliard, stallion roadster and 5 colts, "Young Lexington."
 O. P. Chaney, Canal Winchester, mare other than draft, "Emily Peyton."
 Jno. S. Smart, Jerome, draft mare.
 D. O. Heiskell, South Charleston, roadster stallion and 5 colts, "Whip Clay."
 Geo. W. Rebman, Oliversburg, draft stallion, "Cheshire."
 D. Mason, Xenia, trotting mare, "Lady Suffolk."
 John Reber, Lancaster, draft stallion, "Shakespeare."
 " " " "George 3d."
 " " " "Edinburg."
 " " " "Glasgow."
 " " stallion other than draft, "Hurrah."
 " " " "Chestnut colt."

John Reber, Lancaster, mare, other than draft, "Young Fashion."
 B. G. Smythe, Newark, stallion, other than draft, "Woodstock."
 O. H. Wood, Newark, mare, " " "Maid Marion."
 A. O. Bond, Dayton, trotting gelding.
 N. M. Runyan, Marion, mare, other than draft.
 Geo. Sinclair, Milford Centre, draft mare.
 W. M. Edwards, Cleveland, trotting gelding.
 " " " mare.
 Musser & Bro., Lancaster, stallion, other than draft, "Marksmen."
 Adam Garlough, Alpha, trotting gelding.

AWARDS ON SWEEPSTAKES.

Jas. Clark, New Morefield, best and fastest trotting horse, mare or gelding.....	\$200
Jas. Alexander, Columbus, 2d best.....	100
Oskamp & Wade, Miamisville, 3d best.....	50

AWARDS ON HORSES.

John Reber, Lancaster, best draft stallion, any age.....	100
Geo. Sinclair, Milford Center, best draft mare, any age.....	50
John Reber, Lancaster, best stallion any age or breed, other than draft.....	100
D. W. Rawlings, Urbana, best mare, any age or breed, other than draft.....	50

AWARDS ON COLTS.

Seth Griffin, Elyria, best thoroughbred or roadster stallion, exhibited with 5 of his colts 1 year old.....	100
David Martin, Plain City, best draft or general purpose stallion, exhibited with 5 of his colts 1 year old.....	100

AWARDING COMMITTEE.—H. C. Sheppard, Columbus; Anderson DeWitt, Washington C. H.; Charles Lincoln, North Lewisburg.

JUDGES OF TROTting RACES.—James Fullington, Irwin Station; A. C. Jennings, Urbana; R. D. Hershman, Dayton.

ENTRIES OF JACKS AND MULES.

H. N. Meek, Owensville, jennet, 3 years and over, "Mollie."
 " " " " "Katy."
 " " " 2 years and under 3, "Nelly."
 J. J. Scarff, New Carlisle, jennet, 3 years and over.
 " " " "
 " " " 2 years and under 3.
 Louis Claget, Xenia, jennet, 3 years and over.
 W. J. Van Meter, Horr P. O., mule, 1 year and under 2.
 " " " colt.
 Day and Johnson, New Carlisle, jack, 3 years and over, "Bourbon."

Frank Mitchell, London, pair mules, 3 years and over.
 J. W. Davis, Dublin, jack, 3 years and over, "Jeff."
 J. M. Thomas, Dublin, mule 2 years and over.
 " " " "
 " " " " 1 year and under 2.
 D. P. Larkin, Selma, pair mules 3 years and over.
 " " mule, 3 years and over.
 J. J. Scarff, New Carlisle, mule colt.
 " " "
 Calvin Bargdell, Jamestown, jack, 3 years and over, "Black Warrior."
 " " mule colt.
 Isaac Griffith, Wagram, jack, 2 years and under 3.
 David Tuttle, Springfield, pair mules, 3 years and over.
 " " mule 2 years and over.
 J. A. Cheney, Mutual, pair mules, 3 years and over.
 " " mule 2 years and over.
 J. M. Forgy, Midway, " "
 " " " "

AWARDS ON JACKS AND MULEES.

Calvin Bargdell, Jamestown, best Jack, 3 years and over.....	\$40
Day & Johnson, New Carlisle, 2d best.....	20
Best jack 3 years and under 4	No award.
2d best.....	No award.
J. J. Scarff, New Carlisle, best jennet 3 years and over.....	20
Louis Claget, Xenia, 2d best	10
J. J. Scarff, New Carlisle, best jennet 2 years and under 3.....	15
2d best.....	No award.
D. P. Larkin, Selma, best pair mules 3 years and over.....	30
J. M. Forgy, Midway, best mule 2 years and over.....	20
J. M. Thomas, Dublin, best mule 1 year and under 2.....	15
J. J. Scarff, New Carlisle, best mule colt.....	15

The Committee recommend that a sweepstake premium be offered for any age, in addition to 2 years and over, and make this 2 years and under 3.

AWARDING COMMITTEE.—J. T. Warder, Springfield; Z. H. Perrill, Groveport; Henry Ten Eyck, Tippecanoe.

ENTRIES OF CATTLE—SHORTHORNS.

J. Rakestraw, Clifton, bull 4 years old, "Rennick's."
 C. T. Rohrer, Tremont bull 3 years old, "Grant."
 Wright & Ross, Bucyrus, bull, 2 years and under 3, "Sir Frederick."
 R. R. Seymour, Bainbridge, bull 3 years and over, "Duncan's Airdrie."
 " " bull 1 year and under 2, "Count Tageult."
 " " bull calf.
 " " "

R. R. Seymour, Bainbridge, cow 3 years and over, "Queen of Highland."

"	"	"	"	" Mattie Whitcomb."
"	"	"	"	" Iretta."
"	"	"	"	" Duchess of Athol."
"	"	"	"	" Carlotta."
"	"	heifer 1 year and under 2, "Miss Tageult."		
"	"	heifer calf, "Mary Mathews."		
"	"	"	"	" Rose Trimble."
"	"	"	"	" Duchess of Ross 2d."
"	"	"	"	" Lady Paxton."
"	"	cow, with calf at foot, "Mattie Whitcomb."		
"	"	"	"	" Iretta."
"	"	"	"	" Duchess of Athol."
"	"	"	"	" Carlotta."

Jno. Montgomery, Granville, bull two years and under 3, "Airdrie."

"	"	cow, with calf at foot, "Fanny Forrester."		
"	"	cow 3 years and over, "Lady Newham 3d."		
"	"	"	"	" Fanny Forrester."
"	"	heifer 1 year and under 2, "Lady Campbell."		
"	"	cow 2 years and under 3, "Helen Watson."		
"	"	"	"	" Rose of Clarke."
"	"	cow 3 years and over, "2d Louan of Oakland."		
"	"	cow with calf at foot, "2d Louan of Oakland."		
"	"	"	"	" Rose of Clarke."
"	"	bull calf, "Frank Forrester."		
"	"	"	"	" Louanjo."
"	"	heifer calf, "Rose of the Valley."		
"	"	cow 2 years and under 3, "Rose of Oakland."		

Hook & Alexander, Xenia, bull 2 years and under 3, "Royal Lad."

Chas. Hook, Xenia, heifer 1 year and under 2, "Shawnee Belle."

"	"	"	"	" Myrtle Princess."
"	"	bull calf, "Shawnee Lad."		

Levi Jones, South Charleston, bull 2 years and under 3, "Dexter."

H. H. Hankins, Reesville, bull 6 years old, "Red Jacket."

"	"	bull 2 years old, "Sherman."		
"	"	bull 1 year old, "Red Jacket 5th."		
"	"	cow 3 years old, "Emma 14th."		
"	"	cow 2 years old "Emma 16th."		
"	"	cow 2 years old, "Red Janny."		

U. Wilson, Fairfield, Greene Co., bull 2 years old, "Athleta."

"	"	cow with calf at foot, "Kittie Clover."		
"	"	"	"	" Crusader."
"	"	cow 2 years old, "Rosie."		
"	"	heifer calf.		
"	"	"		

Henry Coines, " bull 1 year old, "Orphan Boy."

Geo. J. Stafford, New Carlisle, bull 5 years old, "Col. Moody."

John Martin, Union Village, bull 7 years old, "9th Great Republic."

"	"	bull 5 years old, "Dairy Duke."		
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John Martin, Union Village, bull 2 years old, "26th Great Republic."

Anderson DeWitt, Washington C. H., bull 1 year old, "Red Oak."

" " " " "Richmond."

David Selsor, London, bull 2 years old, "Clifton Duke 3d."

" " cow 3 years old, "Flora Bride."

" " " "Profitable 4th."

" " " "Louan 9th."

" " cow 2 years old, "Louan 10th."

" " heifer 1 year old "Profitable 5th."

" " " "Dimity Mack."

Wm. Warfield, Lexington, Ky., bull 1 year and under 2, "London Duke."

" " bull calf.

" " cow 3 years and over, "Maggie Taylor."

" " " " "London Duchess."

" " cow 2 years and under 3, "London Duchess 4th."

" " heifer 1 year and under 2, "Lucy 19th."

" " " " "Bertha."

" " cow with calf at foot, "London Duchess."

" " heifer calf, "Duchess 5th."

R. G. Dunn, London, bull 3 years and over, "Don Louanjo."

" " bull calf, "Plumwood D."

" " cow 3 years and over, "Plumwood Lass."

" " " " "Plumwood Lass 2d."

" " " " "Lady Grand."

" " cow 4 years and over, "Ruler."

" " cow 2 years and under 3, "Grand Chunk."

" " heifer 1 year and under 2, "Plumwood Lass 5th."

" " " " "Plumwood Lass 6th."

" " " " "Plumwood Lass 7th."

" " " " "Plumwood Belle 4th."

" " heifer calf, "Plumwood Lass 9th."

" " " " "Plumwood Lass 10th."

" " " " "Plumwood Belle 5th."

" " cow with calf at foot, "Plumwood Lass."

" " " " "Plumwood Lass 2d."

Thos. Kirk, Washington C. H., bull 2 years and under 3, "Starlight 3d."

" " bull calf, "New Year's Lad."

" " cow 8 years old, "Carrie Watson."

" " cow 5 years old, "Wabaunsee."

" " " " "Lady Duncan."

" " " " "Lady Sheff 3d."

" " cow 2 years old, "Latest Fashion."

" " heifer calf, "Carrie Watson 2nd."

" " " " "Wabaunsee 2nd."

" " breeding cow with calf at foot.

" " " " "

J. G. Coulter, Reesville, bull 2 years old, "Duke of Fairview."

C. W. Guy, Mechanicsburg, bull 3 years and over, "Heir of Oakland."

" " cow 2 years old, "Mattie 4th."

Wm. Mathews, Etna, bull 3 years old, "Don Juan."	
" " cow 4 years old and over, "Annie."	
" " " "Mary."	
" " heifer calf, "Gipsy Queen."	
" " cow with calf at foot, "Annie."	
Jesse Hagler, Washington C. H., bul. 3 years old and over, "Henry Clay."	
" " bull 1 year old, "Tom Lang."	
" " " "Champion Starlight."	
" " bull calf, "Red Clond."	
" " " "Red Oak."	
" " " "Kingfisher."	
" " cow 11 years old, "Lady Lang."	
" " cow 5 years old, "Lady Lang 2nd."	
" " cow 4 years old, "Hazle 2nd."	
" " cow 2 years old and under 3, "Maggie Lang."	
" " heifer calf, "Lady of the Lake."	
" " " "	
" " cow with calf at foot, "Hazle."	
" " " "Lady Lang 2nd."	

U. Wilson, Fairfield, cow 9 years old, "Kitty Clover."

R. G. Dun, London, cow with calf at foot, "Lady Grand."

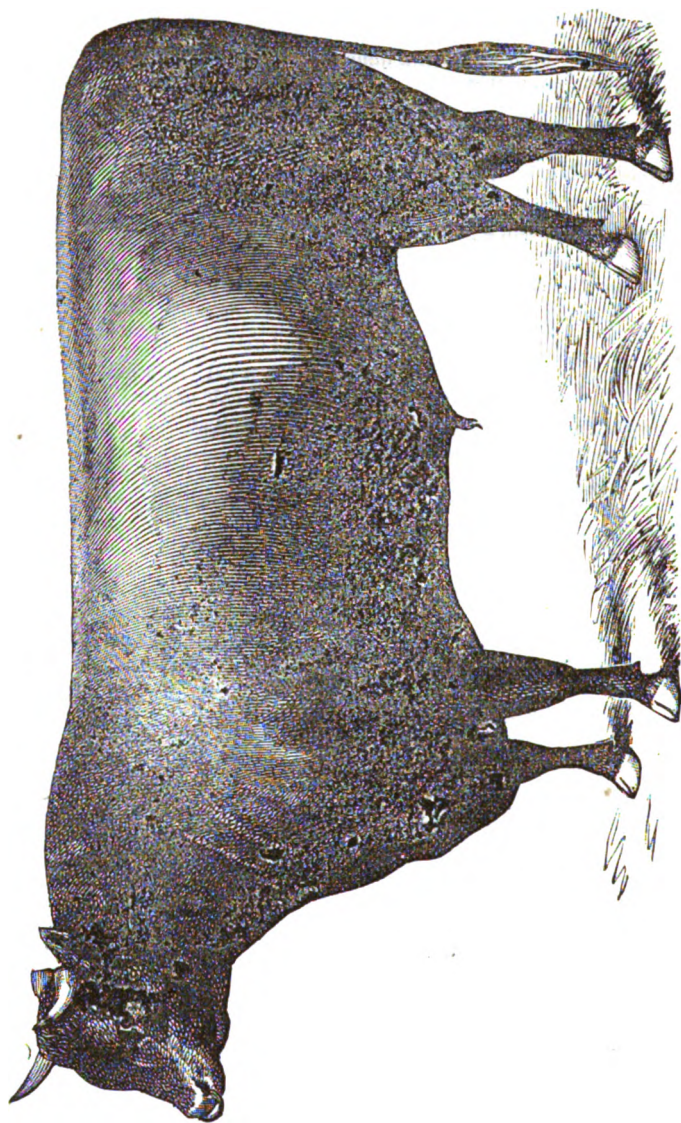
AWARDS ON CATTLE—SHORTHORNS.

Jesse Hagler, Washington, best bull 3 years and over	\$100
C. W. Guy, Mechanicsburg, 2d best.....	50
Hook & Alexander, Xenia, best bull 3 years and under	50
Wright & Ross, Bucyrus, 2d best.....	25
Wm. Warfield, Lexington, Ky., best bull 1 year and under 2.....	40
R. R. Seymour, Bainbridge, 2d best.....	20
R. G. Dun, London, best bull calf	20
Chas. Hook, Xenia, 2d best.....	10
Wm. Warfield, Lexington, Ky., best cow 3 years and over	60
David Selsor, London, 2d best.....	30
Wm. Warfield, Lexington, Ky., best cow 2 years and under 3	40
C. W. Guy, Mechanicsburg, 2d best.....	20
David Selsor, London, best heifer 1 year and under 2.....	30
Wm. Warfield, Lexington, Ky., 2d best	15
R. G. Dun, London, best heifer calf.....	20
R. R. Seymour, Bainbridge, 2d best.....	10
R. G. Dun, London, best breeding cow with calf at foot	75
Jesse Hagler, Washington C. H., 2d best.....	40

AWARDING COMMITTEE.—James Hammond, Copley; W. N. Chamberlin, Kenton; Chas. Phellis, Rosedale; John Montgomery, Granville; T. V. Reber, Upper Sandusky.

ENTRIES OF DEVONS.

- Geo. Frantz, Springfield, bull, 3 years and over, "Grant."
 " " cow, 4 years.
 " " bull, 1 year and under 2, "Minister Sherman."
 J. Buckingham, Zanesville, bull, 3 years and over, "Queen Ann's Huron."
 " " cow, 3 years and over, "Nemophila."
 " " " " "Wanetta."
 Wm. Cahoon, Wilkesville, bull, 2 years and under 3.
 S. S. Campbell, Cadiz, bull, 3 years and over, "Prince Albert."
 Jesse Mead, Bowlsuville, bull, 3 years and over, "Grant."
 " " cow, "Mayflower."
 Thos. B. Binnington, North Eaton, bull, 2 years and under 3.
 " " bull calf.
 " " heifer, 2 years and under 3.
 " " cow, 4 years and over (21 years old).
 " " cow (breeding), with calf at foot.
 J. J. Scarff, New Carlisle, bull, 2 years and under 3, "Hamlin."
 Geo. Hasler, Troy, bull 3 years and over.
 J. J. Scarff, New Carlisle, bull calf.
 " " "
 " " cow, 4 years and over.
 " " "
 " " " 3 years and under 4.
 " " "
 " " " 2 years and under 3.
 " " "
 " " heifer, 1 year and under 2.
 " " "
 " " heifer calf.
 " " "
 " " cow, with calf at foot.
 " " "
 " " "
 " " "
 W. B. Perkins, Bryan, bull, 3 years and over, "Prince George."
 " " bull calf, "St. Lawrence."
 " " cow, 3 years old, "Sophia."
 " " " 6 years old, "Ruth."
 " " " 4 years old, "Victoria."
 " " " 3 years old, "Ruth 2d."
 " " heifer calf, "Deademona."
 " " " "Flora."
 " " cow or heifer, 2 years old, "Princess Helena."
 " " cow, with calf at foot.
 John Schenck, East Sycamore, bull, 3 years and over.
 " " bull, 1 year and under 2.
 " " bull calf.



DEVON BULL, "GRANT."

OWNED BY JESSE MEAD, BOWLUSVILLE, CLARKE COUNTY, OHIO.

Winner of first premium at the Ohio State Fair, in 1870 (then two years old). Has taken from one to three first premiums every fall since he was calved, and has never received a second.

John Schenck, East Sycamore, cow, 4 years old.	
" " heifer, 1 year and under 2.	
" " heifer calf.	
" " breeding cow, with calf at foot.	
George Schenck " bull, 3 years and over.	

AWARDS ON DEVONS.

Jesse Mead, Bowlsville, best bull, 3 years and over.....	\$50
John Schenck, East Sycamore, 2 best.....	30
J. J. Scarff, New Carlisle, best bull, 2 years and under 3.....	20
2d best.....	No award.
George Frantz, Springfield, best bull, 1 year and under 2	\$20
John Schenck, East Sycamore, 2d best.....	15
" " best bull calf	15
T. B. Binnington, North Eaton, 2d best	10
James Buckingham, Zanesville, best cow, 4 years and over	35
J. J. Scarff, New Carlisle, 2d best.....	20
" " best cow, 3 years and under 4.....	30
W. B. Perkins, Bryan, 2d best.....	20
" " best cow or heifer, 2 years and under 3.....	20
J. J. Scarff, New Carlisle, 2d best.....	15
" " best heifer, 1 year and under 2.....	15
" " 2d best	10
W. B. Perkins, Bryan, best heifer calf	10
J. J. Scarff, New Carlisle, 2d best	10
John Schenck, East Sycamore, best breeding cow, calf at foot	30
J. J. Scarff, New Carlisle, 2d best.....	20

AWARDING COMMITTEE.—G. W. Hustler, Troy; E. Newcomb, Dayton; J. B. Hicklin, Springfield; Jacob Kemp, Middletown.

ENTRIES OF HEREFORDS.

John Humphrey, Elyria, bull, "Marquis of Bath," 2 years old.	
" " " cow, "Princess Christian," 3 years old.	
" " " cow, "Princess Maud," 6 years old.	
" " " cow, "Princess Cambridge, 6 years old.	
E. Parsons, Pittsfield, bull, "Fair Boy," 4 years old.	
" " " cow, "Kate," 6 years old.	
" " " cow, "Laura," 4 years old.	

AWARDS ON HEREFORDS.

E. Parsons, Pittsfield, best bull.....	\$50
John Humphrey, Elyria, best cow.....	50

AWARDING COMMITTEE—E. Newcomb, Dayton; Jacob Kemp, Middletown; J. B. Hicklin, Springfield; G. W. Hustler, Troy.

ENTRIES OF ALDERNEYS.

John S. Mason, Springfield, bull, "Napoleon," (ped. filed) 3 years old.
 Martha D. McGrew, Springfield, cow, "Eugenia," 4 years old.
 Jas. Edgerton, Barnesville, bull, 4 years old.
 " " cow, 2 years old
 John C. King, Elyria, bull, "Dickey," 4 years old.
 J. L. Meredith, Troy, bull.
 John C. King, Elyria, cow, "Jenny," 6 years old.
 J. Warner, West Jefferson, bull, "Josephus," 2 years old.
 E. W. S. Neff, Yellow Springs, bull, "Don," 3 years old.

AWARDS ON ALDERNEYS.

J. C. King, Elyria, best bull \$50
 " " best cow 50

AWARDING COMMITTEE—E. Newcomb, Dayton; J. B. Hicklin, Springfield; Jacob Kemp, Middletown.

ALDERNEY BULL, "DICKY."

Calved Dec. 26, 1866. Sire, Sambrie; (dam, Shade, imported;) dam, Hattie; g. dam Hattie; sire, imported; g. g. dam, Lucy, imported. Color—gray, brown and white.

ALDERNEY COW, "JENNY."

Sire, Dick Swiveler; dam, imported cow; owned by Godfrey Milford, of Mass.

ENTRIES OF DAIRY STOCK.

R. Baker, Elyria, cow, "Flora," 5 years old.
 " " cow, "Joan of Arc," 4 years old.

AWARDS ON DAIRY STOCK.

The awards on Dairy Stock to be made at the State Fair of 1872.

ENTRIES OF WORK OXEN AND STEERS, AND FAT CATTLE.

Wright & Ross, Bucyrus, bullock, 4 years and over, "Joe Ross."
 J. V. Cartmell, Springfield, fat cow, 10 years.
 R. R. Seymour, Bainbridge, fat cow, 4 years.
 " " fat cow, 5 years.
 Anderson DeWitt, Washington C. H., fat steer, 3 years, "DeWitt Clinton."
 " " " fat cow, 4 years, "Zenobia."
 David Selsor, London, fat steer, 4 years, "Nat Squires."
 L. C. Coffman, Washington C. H., bullock, 4 years, "Red Bird."
 Jesse Hagler, " " fat cow, 4 years and over.

AWARDS ON WORK OXEN AND STEERS.

Best yoke of oxen, 4 years and over.....	No award
Best yoke of steers, 3 years and under 4.....	"
Best yoke of steers, 2 years and under 3.....	"

FAT CATTLE.

Wright & Ross, Bucyrus, best single bullock, 4 years and over.....	\$50
David Selsor, London, 2d best.....	40
Anderson DeWitt, Washington C. H., best steer, 3 years and under 4.....	50
2d best.....	No award
Best steer, 2 years and under 3.....	"
2d best.....	"
Anderson DeWitt, Washington C. H., best cow or heifer.....	\$50
R. R. Seymour, Bainbridge, 2d best.....	25

AWARDING COMMITTEE—R. Seymour, Bainbridge; Samuel Goodfellow, Plattsburg
D. C. Wilhelm, Nashport; John Martin, Lebanon.

ENTRIES OF CATTLE—SWEEPSTAKES.

- Wright & Ross, bull, any age or class, "Sir Frederick."
- R. R. Seymour, Bainbridge, bull with 4 heifers, of one breed, bred and owned by exhibiter: "Carlotta's Airdrie," "Rose Trimble," "Lady Paxton," "Mary Mathews," and "Duchess of Rose, 2d."
- R. R. Seymour, Bainbridge, bull with 4 cows, of one breed, owned by exhibiter: "Duncan's Airdrie," "Queen of Highland," "Mattie Whitcomb," "Duchess of Athol," "Miss Tageult."
- R. R. Seymour, Bainbridge, bull, 5 of his calves not less than 6 months old.
- " " bull, any age or class, "Duncan's Airdrie."
- " " bull, any age or class, "Count Tageult."
- " " bull, any age or class, "Carlotta's Airdrie."
- " " cow, any age or class, "Mattie Whitcomb."
- " " cow, any age or class, "Queen of Highland."
- " " cow, any age or class, "Miss Tageult."
- R. R. Seymour, Bainbridge, bull and 4 cows or heifers, owned and bred by exhibiter: "Count Tageult," "Mattie Whitcomb," "Miss Tageult," "Carlotta," and "Iretta."
- John Montgomery, Granville, cow, any age or class, "Rose of Clarke."
- " " " cow, any age or class, "2d Louan of Oakland."
- " " " cow, any age or class, "Lady Newham, 3d."
- " " " cow, any age or class, "Fanny Forrester."
- " " " bull, any age or class, "Airdrie."
- John Montgomery, Granville, herd of bull and 4 cows, one breed, owned by exhibiter: "Airdrie," "Fanny Forrester," "Lady Newham 3d," "Rose of Clarke," "2d Louan of Oakland."
- Hook & Alexander, Xenia, bull, any age or class, "Royal Lad."
- Levi Jones, South Charleston, bull, any age or class, "Dexter."
- H. H. Hankins, Reesville, bull, any age or class, "Red Jacket."

- H. H. Hankins, Reesville, bull, any age or class, "Sherman."
 " " bull, any age or class, "Red Jacket 5th."
 " " cow, any age or class, "Emma 14th."
 " " cow, any age or class, "Emma 16th."
 " " bull and 5 calves.
 " " cow, any age or class, "Red Jenny."
- U. Wilson, Fairfield, bull, any age, "Athleta."
 " " cow, any age.
- Henry Coines, " bull, any age, "Orphan Boy."
- John Martin, Union Village, bull, any age, "9th Great Republic."
 " " bull, any age, "Dairy Duke."
 " " bull, any age, "26th Great Republic."
- David Selsor, London, bull, any age, "Clifton Duke 3d."
 " " cow, any age, "Flora Bride."
 " " cow, any age, "Profitable 4th."
 " " cow, any age, "Louan 10th."
- David Selsor, London, herd of bull, "Clifton Duke," and 4 cows or heifers, of one breed, owned and bred by exhibiter.
 " " " " " "
- Wm. Warfield, Lexington, Ky., bull, any age, "Loudon Duke 4th."
- Wm. Warfield, Lexington, Ky., herd, bull and 4 cows, of one breed, owned and bred by exhibiter.
- Wm. Warfield, Lexington, Ky., herd, bull and 4 cows, of one breed, owned by exhibiter.
 " " cow, "Loudon Duchess."
 " " cow, "Maggie Taylor."
 " " cow, "Maggie Muscatoon."
 " " cow, "Duchess 4th."
 " " cow, "Lucy 19th."
 " " cow, "Bertha."
- R. G. Dun, London, bull, any age, "Don Louanjo."
- R. G. Dun, London, herd, bull and 4 cows, of one breed, owned and bred by exhibiter.
 " " " " " "
 " " bull, "Don Louanjo," and 5 calves.
 " " cow, "Plumwood Lass."
 " " cow, "Plumwood Lass 2d."
 " " cow, "Plumwood Lass 5th."
 " " cow, "Plumwood Lass 6th."
 " " cow, "Plumwood Lass 7th."
 " " cow, "Plumwood Belle 5th."
- Thomas Kirk, Washington C. H., bull, any age, "Starlight 3d."
 " " herd, bull and 4 cows, of one breed, owned by exhibiter.
 " " cow, "Carrie Watson."
 " " cow, "Wabannsee."
 " " cow, "Lady Duncan."
 " " cow, "Lady Sheff 3d."
 " " cow, "Latest Fashion."
- J. G. Coulter, Reesville, bull, any age, "Duke of Fairview."
- David H. Root, Lebanon, bull, "Mammoth Snowdrop."

C. W. Guy, Mechanicsburg, bull, any age, "Heir of Oakland."

" " cow, any age, "Mattie 4th."

Wm Mathews, Etna, bull, any age, "Don Juan."

" " cow, any age, "Annie."

" " cow, any age, "Mary."

Jesse Hagler, Washington C. H., bull, any age, "Henry Clay."

" " bull, any age, "Champion Starlight."

" " cow, "Lady Lang."

" " cow, "Lady Lang 2d."

" " cow, "Hazle."

Jesse Hagler, Washington C. H., herd of bull and 4 cows, of one breed, owned by exhibiter: "Henry Clay," "Lady Lang," "Lady Lang 2d," "Hazle," "Maggie Lang."

AWARDS ON CATTLE—SWEEPSTAKES.

Wm. Warfield, Lexington, Ky., best herd of one bull and four cows or heifers, all of one breed, and owned and bred by the exhibiter..... \$200

Wm. Warfield, Lexington, Ky., best herd of one bull and four cows or heifers, all of one breed, and owned by one exhibiter..... 200

H. H. Hankins, Reeseville, best breeding bull, exhibited with five of his calves, 6 months old..... 100

Hook & Alexander, Xenia, best bull of any age or class..... 100

C. W. Guy, Mechanicsburg, best cow of any age or class..... 100

AWARDING COMMITTEE—Robert Reed, London; S. H. White, Marseilles; James R. Anderson, Anderson.

ENTRIES OF SHEEP—MERINOS.

Archer, Herriott & Wood, Burgettstown, Pa., ram, 2 years and over.

Archer, Campbell & Herriott, Burgettstown, Pa., ram, 2 years and over.

Wm. L. Archer, Burgettstown, Pa., ram, under 2 years.

" " pen of 3 ewes, 2 years and over.

" " pen of 3 ewes, under 2 years.

" " " "

" " ram lamb.

" " "

" " pen of 3 ewe lambs.

" " "

Jas. E. Yeazel, Springfield, ram, 2 years and over.

" " "

" " ram, under 2 years.

" " pen of 3 ewes, 2 years and over

" " ram lamb.

" " "

" " pen of 3 ewe lambs.

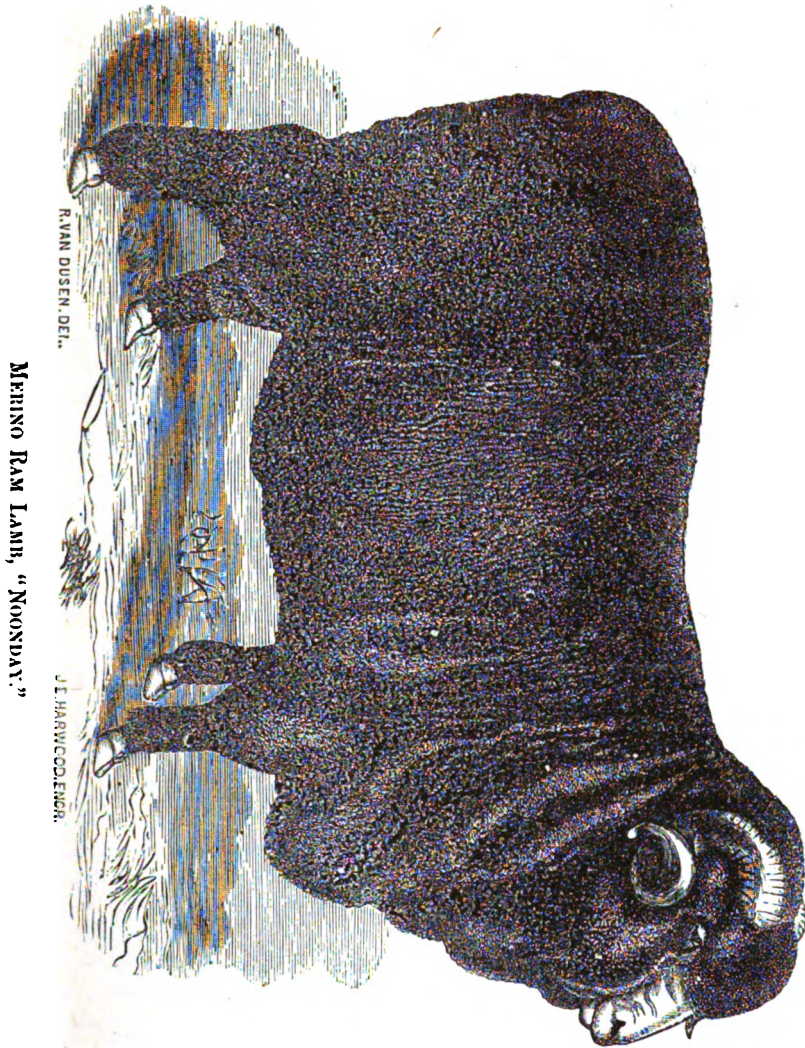
" " ram, 2 years and over.

Jno. M. Miller, Hickory, ram, 2 years and over, "Bashaw."

" " ram, under 2 years, "Bravo."

" " ram lamb, "Mufti."

- John M. Miller, Hickory, pen of 3 ewes, 2 years and over.
 " " pen of 3 ewes, under 2 years.
- Wm. A. Herriott, Moorehead, Pa., ram, under 2 years, "Burgettstown."
 " " pen of 3 ewes, 2 years and over.
 " " pen of 3 ewes, under 2 years.
 " " ram lamb.
 " " pen of 3 ewe lambs
- S. S. Campbell, Cadiz, ram, 2 years and over, "Green Mountain."
 " " ram, under 2 years, "Romeo."
 " " ram, under 2 years, "Van Trump."
 " " pen of 3 ewes, 2 years and over.
 " " pen of 3 ewes, under 2 years.
- E. J. Hiatt & Bros., Chester Hill, ram, 2 years and over, "Roxby."
 " " ram, under 2 years, "Rocky Mountain."
 " " ram, under 2 years, "Black Prince."
 " " pen of 3 ewes, 2 years and over.
 " " " "
 " " " under 2 years.
 " " ram lamb, "Berwick."
 " " " "Buckeye."
 " " pen of 3 ewe lambs.
- Robt. Perrin, Patterson's Mills, ram, 2 years and over.
 " " ram, 1 year and under 2.
 " " pen of 3 ewes, 2 years and over.
- Boyer, White & Seligman, Bucyrus, ram, 2 years and over.
 " " "
 " " "
 " " pen of 3 ewes, 2 years and over.
 " " pen of 3 ewes.
 " " pen of 3 ewes, under 2 years.
 " " "
 " " ram lamb.
 " " "
 " " pen of 3 ewe lambs.
 " " "
- R. Perrin, Patterson's Mills, pen of ewes, under 2 years.
- L. Shipley, Burgettstown, Pa., ram, 4 years old.
 " " ram, 3 "
 " " ram, 2 "
 " " ram, 2 "
 " " ram, 2 "
- Jno. M. Miller, Hickory, ram, 2 years and over.
- E. Campbell, Pittsfield, ram, 2 years and over.
 " " pen of 3 ewes, over 2 years.
 " " pen of ewe lambs.
- Geo. St. Clair, Milford Center, pen of 3 ewes.
- E. Campbell, Pittsfield, ram, 1 year old.
 " " "
- J. N. Wright, Johnstown, ram, 2 years old, "Sweepstakes."



MERINO RAM LAMB, "NOONDAY."

PEDIGREE.

"MIDDLEBURY, VERMONT, Aug. 12th, 1868.

"This may certify that we have this day sold to Messrs. Archer & Campbell, of Burgettstown, Pa., one thoroughbred Spanish merino ram lamb, 'Noonday.' Got by Green Mountain, he by Golddrop, he by California Lamb, he by Sweepstakes. Dam by Golddrop, gr. dam by Sweepstakes. Balance of pedigree, find page 121, Practical Shepherd.

"E. HAMMOND & SON."

J. N. Wright, Johnstown, ram, under 2 years.

"	"	pen of 3 ewes, 2 years and over.
"	"	pen of 3 ewes, under 2 years.
"	"	ram lamb.
"	"	"
"	"	pen of 3 ewe lambs.
"	"	"

AWARDS ON MERINOS.

Robt. Perrine, Patterson's Mills, best ram, 2 years and over.....	\$80
J. N. Wright, Johnstown, 2d best	15
S. S. Campbell, Cadiz, best ram, under 2 years	20
E. J. Hiatt & Bro., Chester Hill, 2d best.....	15
S. S. Campbell, Cadiz, best pen of 3 ewes, 2 years and over	30
Wm. A. Herriott, Moorehead, Pa., 2d best.....	15
Boyer, White & Seligman, Bucyrus, best pen of 3 ewes, under 2 years.....	30
S. S. Campbell, Cadiz, 2d best.....	15
Wm. L. Archer, Burgettstown, Pa., best ram lamb	15
Boyer, White & Seligman, Bucyrus, 2d best	10
Wm. L. Archer, Burgettstown, Pa., best pen of 3 ewes	20
E. Campbell, Pittsfield, 2d best.....	10

AWARDING COMMITTEE.—John Bell, New Concord ; J. C. Stevens, Kenton ; D. K. Kellerman, Cedar Hill.

NOTE.—On page 130 of the Report for 1870, is a cut of the Hammond ram, "FORTUNE." Beneath the cut the ram is credited to "Archer," as his property, when in fact the animal was owned by Messrs. Archer, Herriott & Cowen, as will be seen by the sweepstake awards on page 137 of said report.

BURGETTSTOWN, WASHINGTON CO., PA., April 15th, 1872.

Five one-year old ewes, fine wool. Winner of sweepstakes prize for five ewes of any age, at State Fair of 1871. They were sired by Fortune. For pedigree, see page 131, O. S. Agricultural Report for 1870; and from Hammond bred ewes, Pr. Atwood, of Humphrey's importation of 1801 and 1802. For history and description, see Randall's Practical Shepherd.

They will now average ninety pounds weight, and will weigh, when full grown and in good flesh, from one hundred to one hundred and twenty-five pounds. Their heads are short and broad; necks short and heavy, with some folds on the breast and under-part of the neck; the back and loin broad, and almost straight from the neck to the tail; the legs short and muscular—the hind-legs straight and upright; the hind-quarters join down almost in a line with the belly, and the tail coming out almost in a line with the back, and but little drooped; the brisket heavy, strong and prominent.

The wool fine, about No. 1 of Kinderhook grades; staple of twelve months' growth, from two and a half to three inches in length; fleeces weighing on an average twelve pounds unwashed; grows compact and dense; in color, dark on the surface, and inside from light straw-color to almost clear white; is oily, but entirely clear of yolk, or gummy matter, and of uniform quality over the body, from the neck to the breech, opening with the hand; clear and lustrous; covering the top of the head, the belly, and down to the knees well with fleece wool.



ENTRIES OF SHEEP—LONG WOOL—LEICESTERS

Wright & Ross, Bucyrus, ram lamb.

Stott & Jenkins, Dialton, ram 2 years and over.

" " " "
 " " ram under 2 years.
 " " pen of 3 ewes over 2 years.
 " " " under 2 years.
 " " ram lamb.
 " " "
 " " pen of 3 ewe lambs.

S. & T. W. Laundon, Elyria, ram 1 year and under to.

" " " "
 " " pen of 3 ewes over 2 years.
 " " " under 2 years.
 " " ram lamb.
 " " "
 " " pen of 3 ewe lambs.
 " " "

Geo. F. Morgan, Elyria, ram over 2 years.

" " ram under 2 years.
 " " "

G. Farrington, Mechanicsburg, ram under 2 years.

Geo. F. Morgan, Elyria, 3 ewe lambs.

" " ram lamb.

R. White, Urbana, ram over 2 years.

T. W. Laundon, Elyria, ram one year old.

" " "
 " " ram lamb.
 " " "
 " " pen of ewes 2 years.
 " " " 1 year.
 " " pen of ewe lambs.
 " " "

Wm. Tomlin, Dialton, ram under 2 years " Bily."

AWARDS ON LONG-WOOL SHEEP—LIECESTERS.

Stott & Jenkins, Dialton, best ram 2 years and over	\$30
Geo. F. Morgan, Elyria, 2d best.....	15
Wm. Tomlin, Dialton, best ram under 2 years.....	20
S. & T. W. Laundon, Elyria, 2d best.....	15
" " best pen of 3 ewes over 2 years.....	30
Stott & Jenkins, Dialton, 2d best	15
S. & T. W. Laundon, Elyria, best pen of 3 ewes under 2 years.....	30
Stott & Jenkins, Dialton, 2d best.....	15
" " best ram lamb.....	15
Geo. F. Morgan, Elyria, 2d best	10

Stott & Jenkins, Dialton, best pen of 3 ewe lambs	\$20
S. & T. W. Landon, Elyria, 2d best	10

AWARDING COMMITTEE.—T. F. Joy, Delaware; Joshua Browning, Plattsburg; L. R. C. Howard, Zanesville.

ENTRIES OF LONG-WOOL—NOT LEICESTERS.

Wm. Squire, Copopa, ram, 2 years and over.

"	"	"	"
"	"	"	under 2 years.
"	"	"	"
"	"	pen 3 ewes,	over 2 years.
"	"	"	"
"	"	"	under 2 years.
"	"	"	"
"	"	ram lamb.	
"	"	"	"
"	"	pen 3 ewe lambs.	
"	"	"	"

Wright & Ross, Bucyrus, ram lamb.

L. Converse, " "

Wright & Ross, " ram, under 2 years.

Stott & Jenkins, Dialton, ram lamb.

A. J. Buffenberger, Clark Co., ram, 2 years and over.

W. B. Saylor, New Carlisle, ram, under 2 years.

"	"	pen 3 ewes,	2 years and over.
"	"	ram lamb.	
"	"	pen of 3 ewe lambs.	

L. L. Campbell, Pittsfield, Lorain Co., ram and 5 of his get.

Geo. F. Morgan, Elyria, ram, 2 years and over.

"	"	"	"
"	"	ram,	under 2 years.
"	"	"	"
"	"	ram lamb.	
"	"	"	"
"	"	pen 3 ewes,	over 2 years.
"	"	pen of ewes,	under 2 years.
"	"	"	"
"	"	pen of ewe lambs.	
"	"	"	"

Stanley & Wilson, Chillicothe, ram, under 2 years.

"	"	pen of ewes,	under 2 years.
"	"	ram lamb.	

Jacob Peirce, South Charleston, ram, over 2 years.

"	"	ram,	over 1 year.
"	"	1 buck lamb.	
"	"	ram lamb.	
"	"	"	"

Jacob Peirce, South Charleston, ram lamb.
 " " ewe (aged).
 " " ewe, 1 year.
 " " ewe lamb.

AWARDS ON LONG-WOOL SHEEP—NOT LEICESTERS.

Geo. F. Morgan, Elyria, best ram 3 years and over	\$30
Wm. Squire, Copopa, 2d best	15
Geo. F. Morgan, Elyria, best ram under 2 years	20
Wm. Squire, Copopa, 2d best	15
Geo. F. Morgan, Elyria, best pen of 3 ewes over 2 years	30
Wm. Squire, Copopa, 2d best	15
" " best pen of 3 ewes under 2 years	30
Stanley & Wilson, Chillicothe, 2d best	15
Wm. Squire, Copopa, best ram lamb	15
Stott & Jenkins, Dialton, 2d best	10
Wm. Squire, Copopa, best pen of 3 ewe lambs	20
Geo. F. Morgan, Elyria, 2d best	10

AWARDING COMMITTEE.—Joshua Browning, Plattsburg; L. R. C. Howard, Zanesville;
 Robert Stewart, Hamlin's Station, Pa.

ENTRIES OF SOUTHDOWN AND FAT SHEEP.

Wm. Squire, Copopa, single fat sheep.
 Solomon Byl, Osborn, ram under 2 years.
 " " ram lamb.
 " " "
 " " pen of 3 ewes 3 years and over.
 Thos. Bennington, Laporte, ram 2 years and over.
 " " "
 " " ram under 2 years.
 " " "
 " " pen of 3 ewes 3 years and over.
 " " " "
 " " " " under 2.
 " " ram lamb.
 " " "
 " " pen of 3 ewe lambs.
 " " "
 " " 3 fat lambs.
 Thos. B. Binnington, North Eaton, ram 2 years and over.
 " " ram 1 year and under 2 years.
 " " pen of ewes under 2 years.
 " " ram lamb.
 " " pen of 3 ewe lambs.
 Stott & Jenkins, Dialton, pen of 3 fat sheep.
 " " single fat sheep.
 " " three fat lambs.

Thos. B. Stiles, Springfield, ram lamb.
 " " "
 " " "
 " " pen of three ewe lambs.
 " " " under 2 years.
 " " ram over 2 years.
 Perry Stewart, " ram under 2 years.
 C. Tuite, South Charleston, ram 2 years and over.
 S. & T. W. Laundon, Elyria, pen of 3 fat sheep.
 " " single fat sheep.
 " " 3 fat lambs.
 Jesse Hagler, Washington C. H., buck 2 years and over.
 Richard White, Urbana, " "
 Geo. St. Clair, Milford Center, pen of fat sheep.
 " " single fat sheep.
 T. W. Laundon, Elyria, pen of fat sheep.
 " " single fat sheep.
 " " pen of fat lambs.
 Michael, Shocknessy, Springfield, ram under 2 years.
 Stanley & Wilson, Chillicothe, pen of three fat sheep.

AWARDS ON SOUTHDOWN SHEEP.

Thos. B. Binnington, N. Eaton, best ram 2 years and over	\$30
Thos. Bennington, Laporte, 2 best.....	15
" " best ram under 2 years.....	20
Solomon Byl, Osborn, 2d best	15
Thos. Bennington, Laporte, best pen of 3 ewes 2 years and over.....	30
" " 2d best.....	15
Thos. B. Binnington, N. Eaton, best pen of 3 ewes under 2 years.....	30
Thos. Bennington, Laporte 2d best	15
" " best ram lamb.....	15
Thos. B. Binnington, N. Eaton, 2d best	10
Thomas B. Stiles, Springfield, best pen of 3 ewe lambs.....	20
Thos. Bennington, Laporte, 2d best.....	10

AWARDS ON FAT SHEEP.

S. & T. W. Laundon, Elyria, best pen of 3 fat sheep.....	15
Stott & Jenkins, Dialton, 2d best	10
S. & T. W. Laundon, Elyria, best single fat sheep.....	5
" " best 3 fat lambs.....	10

AWARDING COMMITTEE.—G. F. Morgan, Elyria; George Watson, South Charleston; Wm. A. Herriott, Morehead, Pa.

ENTRY OF SWEEPSTAKES ON FINE-WOOL SHEEP.

Archer, Herriott & Wood, Burgettstown, Pa., ram, with 5 of his get, "Fortune."
 Wm. L. Archer, " pen of 5 ewes.
 " " "
 Jas. Glass, " ewe, with 3 of her lambs.

Archer, Herriott & Campbell, Burgettstown, Pa., ram, with 5 of his get, "Noonday."

J. E. Yeazel, Springfield, ram, with 5 of his get.

" " ewe, with 3 of her lambs.

" " pen of 5 ewes.

John M. Miller, Hickory, ram, with 5 of his get, "Bashaw."

" " ewe, with 3 of her lambs, "Aurora."

" " pen of 5 ewes, "Aurora Family."

Wm. A. Herriott, Moorehead, Pa., pen of 5 ewes.

S. S. Campbell, Cadiz, ewe, with 3 of her lambs.

" " pen of 5 ewes.

E. J. Hiatt & Bros., Chester Hill, ewe, with 3 of her lambs.

" " pen of 5 ewes, any age.

Robt. Perrin, Patterson's Mills, ram, with 5 of his get.

" " ewe, with 3 of her lambs.

" " pen of 5 ewes.

Boyer, White & Seligman, Bucyrus, ram, with 5 of his get.

" " " " "

" " " ewe, with 3 of her lambs.

" " " pen of 5 ewes.

E. Campbell, Pittsfield, ram, with 5 of his get.

" " ewe and 3 lambs.

J. N. Wright, Johnstown, ram, with 5 of his get.

" " pen of 5 ewes, any age.

AWARDS ON SWEEPSTAKES ON FINE-WOOL SHEEP.

Archer, Herriott & Campbell, Burgettstown, Pa., best ram of any age with 5 of his get \$50

S. S. Campbell, Cadiz, best ewe of any age with 3 of her lambs..... 50

W. L. Archer, Burgettstown, Pa., best pen of 5 ewes of any age..... 50

AWARDING COMMITTEE.—James W. Ross, Perrysburg; John Robinson, West Beaver; W. C. Deardorff, Canal Dover.

ENTRIES OF SWEEPSTAKES ON LONG-WOOL SHEEP.

Wm. Squire, Copopa, ram with 3 of his get.

" " ewe with 2 of her lambs.

" " pen of 5 ewes.

Wright & Ross, Bucyrus, ram any age.

Stott & Jenkins, Dialton, "

" " ewe with two of her lambs.

" " pen of 5 ewes.

A. J. Buffenbarger, Clark, ram 3 years and over.

S. & T. W. Laundon, Elyria, ewe with two of her lambs.

" " pen of 5 ewes.

L. Converse, Bucyrus, ram lamb.

" " pen of not less than 5 ewes.

Geo. F. Morgan, Elyria, 5 ewes any age.

S. Byl, Osborn, ewe and 3 lambs.
 " ram with 5 of his get.
 Geo. F. Morgan, Elyria, ewe with 2 lambs.
 Stanley, & Wilson, Chillicothe, pen of 5 ewes.
 Geo. St. Clair, Milford Center, "
 Wright & Ross, Bucyrus, ram of any age.
 T. W. Laundon, Elyria, ewe with two of her lambs.
 " " best 5 ewes.

AWARDS ON SWEEPSTAKES ON LONG-WOOL SHEEP.

Stott & Jenkins, Dialton, best ram of any age with three of his get..... \$50
 " " best ewe of any age with two of her lambs..... 50
 Stanley & Wilson, Chillicothe, best pen of 5 ewes of any age..... 50
 AWARDING COMMITTEE.—N. S. Townshend, Avon; H. Baxter, Charles M. Clark.

ENTRIES OF WOOL.

G. R. Starr, Elyria, 10 fleeces long wool.

AWARDS ON WOOL.

Best 10 fleeces Saxony wool No award.
 " Merino wool..... No award.
 G. R. Starr, Elyria, best ten fleeces long wool \$10
 AWARDING COMMITTEE.—N. S. Townshend, Avon; H. Baxter, Charles M. Clark.

ENTRIES OF SWINE—LARGE BREEDS.

P. Buffenbarger, South Charleston, boar 13 mos., "Magie."
 " " " 4 " "
 " " " 4 " "
 " " sow 4 " "
 " " " 4 " "
 " " " 4 " "
 " " " 4 " "
 H. B. Clark, Springfield, boar 1 year and under 2, (15 mos.)
 " " " under 1 year, (5 months.)
 " " " (5 ")
 " " " (5 ")
 " " sow under 2 years, (5 mos.)
 H. W. Buckman, Wakeman, boar over 1 year and under 2.
 " " " " "
 " " sow over 2 years.
 " " under 2 years.

Jos. Whitely, Springfield, bear 1 year and under 2.

" " " under 1 year.

" " " "

" " sow over 2 years.

" " " "

" " " under 2 years.

" " " "

" " sow with pigs under 6 mos.

A. L. Bramble, Plainsville, boar over 2 years.

" " " 1 year and under 2.

" " " boar under 1 year.

" " sow under 2 years.

Jos. Work, Houston, boar under 1 year.

" " " "

" " sow over 2 years.

" " " under 2 years.

" " " with litter of pigs under 6 mos.

" " " " over "

G. W. Kimball, Springfield, sow with litter of pigs under 6 mos.

J. Davidson, Xenia, boar 1 year and under 2.

R. Oxtoby, Springfield, sow with pigs under 6 mos.

" " " " "

" " boar under 1 year.

" " " "

W. Craig Lee, Cross Creek, boar under 1 year.

" " sow under 2 years.

" " " over 2 years.

" " " with litter of pigs under 6 mos.

Wm. Huffman, Harveysburg, boar 3 years and over.

Henry Webster, Springfield, boar 1 year and under 2.

Austin McCreary, Springfield, boar 2 years and under 3.

" " " 1 year and under 2

" " " "

" " " under 1 year.

" " sow over 2 years.

" " " "

" " " "

" " " "

" " " "

" " " 1 year and under 2.

" " " with pigs under 6 mos.

Jno. W. Cleeland, Springfield, boar under 1 year.

" " " "

" " " "

S. H. Todd, Wakeman, boar 1 and under 2 years.

" " sow and litter of pigs under six mos.

" " sow and pigs over 6 mos.

" " boar under 1 year.

" " sow over 2 years.

T. C. Robinson, Piqua, 1 boar 6 months and over.

" " " "

J. Browning, Washington, C. H., sow with litter of pigs over 6 months.

J. E. Johnson, Clifton, Greene Co., boar 1 year and under 2, "Sam."

" " boar under 1 year, "Black Jim."

" " " under 1 year.

" " " "

" " " "

" " sow under two years.

" " " "

" " " "

J. R. Johnson, " sow with litter of pigs over 6 mos., "Rachel."

" " sow over 2 years old, "Sally."

" " " "

Wm. Huffman, Harveysburg, boar 2 years and over.

Chas. Stine, Fairfield, boar under 1 year, "Poland."

Ayres McCreary, Monroe, 1 boar over 2 years old.

" " 1 boar over 1 and under 2.

" " " "

" " 1 sow over 2 years.

" " " "

" " " "

" " 1 under 2 years.

" " " "

" " " "

" " 1 boar under 1 year.

" " " "

W. B. Saylor, New Carlisle, sow under 2 years.

" " " "

Joshua Wolf, Byron, 1 boar 5 mos. old.

" " " "

R. E. Robinson, Bowlsnaville, boar 1 year and under 2.

Sam'l D. Shields, Jr., Paddy's Run, Butler Co., sow 2 years old.

" " " sow 1 year old.

" " " "

" " " "

" " " with a litter of pigs under 6 mos.

" " " boar under 1 year.

W. W. Greer, Oxford, boar 2 years old and over.

" " boar under one year old.

" " " "

" " " "

" " " "

" " " "

" " " "

" " sow 2 years and over.

" " sow under 2 years.

" " " "

" " sow with litter of pigs under 6 mos.

W. W. Greer, Oxford, sow with litter of pigs over six months.

G. W. Kimball, Springfield, boar under 1 year.

" " "

J. M. White, Springfield, sow under 2 years.

L. E. Parrott, Washington C. H., boar 2 years old.

" " boar 1 and under 2 years.

L. E. Parrott, Washington C. H., boar, under 1 year.

" " sow, over 2 years.

" " sow, under 2 years.

" " sow, with litter under 6 months.

T. F. Parrott, " sow, over 2 years.

" " sow, under 2 years.

" " sow, over 18 months and under 2 years.

" " sow, over 1 and under 2 years.

Benj. F. Coffran, " boar, 2 years and over.

" " boar, over 18 months and under 2 years.

Joshua Browning, Plattsburg, boar, under 1 year.

" " sow, under 2 years.

Robt. McElheny, Union Village, boar, over 2 years.

" " boar, under 1 year.

" " sow, under 2 years.

" " sow, with litter over 6 months.

A. & D. Joy, Carey, boar, over 2 years.

" " sow, over 2 years.

Robt. McElheny, Union Village, sow, over 2 years.

A. Lindsay, Washington C. H., boar, under 1 year.

A. L. Bramble, Plainville, boar, over 2 years.

" " boar, over 1 and under 2 years.

" " sow, under 2 years.

Rich'd White, Urbana, boar, 1 year and under 2.

E. Newcomb, Dayton, boar, over 1 year.

" " boar, under 1 year.

" " boar, "

mory Smith, London, sow, 2 years and over, "Lady Morris."

" " sow, with litter under 6 months.

" " boar, under 6 months.

" " boar, "

A. J. Wilson, Laporte, sow, 2 years old.

" " sow, 1 year old.

AWARDS ON LARGE BREEDS.

W. W. Greer, Oxford, best boar over 2 years	\$50
B. F. Huffman, Washington C. H., 2d best	25
E. Newcomb, Dayton, best boar 1 year old and under 2	
S. H. Todd, Wakeman, 2d best	20
R. Oxtoby, Springfield, best boar under 1 year	25
John W. Cleeland, Springfield, 2d best	15
S. D. Shields, Paddy's Run, Butler Co., best sow over 2 years	40
Ayres McCreary, Monroe, 2d best	20

James Whitely, Springfield, best sow under 2 years	\$40
S. D. Shields, Paddy's Run, Butler Co., 2d best.....	20
G. W. Kimball, Springfield, best sow with litter of pigs under 6 months old	50
R. Oxtoby, Springfield, 2d best.....	25
S. H. Todd, Wakeman, best sow with litter of pigs over 6 months old.....	40
J. Browning, Washington C. H., 2d best.....	20

AWARDING COMMITTEE.—George Poundstone, of Muskingum county; Jacob Kemp, of Butler county; B. F. Wright, of Clarke county.

ENTRIES OF SWINE—BERKSHIRES.

E. B. Cassilly, Springfield, boar, 1 year and under 2.	
Wright & Ross, Bucyrus, boar, under 1 year.	
Henry C. Osborn, Westville, sow, under 2 years.	
“ “ sow, with litter of pigs under 6 months.	
Noble Osborn, “ boar, under 1 year.	
Jason and J. B. Mahan & Co., Allen's P. O., boar, over 1 and under 2 years.	
Jason Mahan, Allen's P. O., sow, over 2 years.	
“ “ sow, under “	
“ “ sow, with litter of pigs over 6 months.	
“ “ boar, under 1 year.	
“ “ “ “	
“ “ “ “	
Thos. Bennington, Laporte, boar, 2 years old.	
John Wylie, Cadiz, boar, under 1 year old.	
“ “ boar, “	
“ “ sow.	
“ “ sow, 3 years old.	
Saml. M. Pryor, Paris, Ky., boar, 2 years and over.	
“ “ boar, under 1 year.	
“ “ sow, 2 years old and upward.	
“ “ sow, “ “	
“ “ sow, under 2 years.	
“ “ sow, “	
“ “ sow, under 1 year.	
Thos. Bennington, Laporte, boar, 1 year and under 2.	
“ “ boar, under 1 year.	
“ “ sow, under 2 years.	
“ “ sow, with litter of pigs under 6 months.	
J. H. Brotherton, Cedarville, boar, under 1 year.	
“ “ sow, with litter of pigs under 6 months.	
Thos. B. Binnington, North Eaton, boar, over 1 and under 2 years.	
“ “ boar, under 1 year.	
“ “ sow, under 2 years.	
Austin McCreery, Springfield, sow, under 2 years.	
John Peterson, Spring Valley, boar, 6 months old, “Royal George IV.”	
“ “ sow, “	

John Peterson, Spring Valley, sow, over 2 years old, "Sally."

" " sow, " "Ruth."

" " boar, 1 year old and under 2.

" " sow, under 2 years.

" " sow, " "

" " sow, with pigs under 6 months, "Lib."

" " sow, " " "White."

" " sow, with pigs over 6 months, "Fannie."

" " sow, " " "Berkshire."

A. J. Buffenberger, South Charleston, boar, 1 year and under 2.

" " boar, under 1 year.

" " sow, 2 years.

John Peterson, Spring Valley, sow, 2 years and over.

J. B. Mahan, Allen's P. O., sow, with litter of pigs under 6 months.

" " boar, over 2 years.

J. H. Dorsey, " boar, under 4 year.

J. Browning, Washington C. H., sow, 2 years old and over, "Maggie."

" " sow, " " "Molly."

" " sow, 1 year and under 2.

" " sow, with litter of pigs under 6 months.

" " boar, under 1 year, "Abraham."

J. H. Brotherton, Cedarville, boar, under 1 year.

" " sow, under 2 years.

" " sow, with litter of pigs under 6 months.

S. S. Staley, Mechanicsburg, sow, under 2 years.

W. H. C. McCoy, Lafayette, boar, over 1 and under 2 years.

" " boar, under 1 year.

" " boar, " "

" " sow, under 2 years.

" " sow, " "

L. Converse, Bucyrus, boar, under 1 year.

John McFadden, Cadiz, boar, under 1 year.

" " boar, " "

" " sow, under 1 year.

Adam Garlaugh, Alpha, boar, over 2 years.

John McFadden, Cadiz, boar, " "

Stanley & Wilson, Chillicothe, boar, under 1 year.

" " sow, under 2 years.

" " sow, " "

G. C. Foster, Richmondale, boar, over 2 years.

" " boar, over 1 and under 2 years.

" " sow, over 2 years.

D. W. Harris, De Graff, sow, with litter of pigs under 6 months.

" " sow, 1 year and under 2.

Jos. Browning, Washington C. H., sow, 2 years old and over, with litter over 6 months.

Simon Beery, Urbana, boar, under 1 year.

" " boar, " "

" " boar, 1 year and over.

S. E. Merry, Milan, sow, under 2 years.

AWARDS ON BERKSHIRES.

G. C. Foster, Richmondale, best boar over 2 years	\$50
John McFadden, Cadiz, 2d best	25
W. H. C. McCoy, Lafayette, best boar over 1 and under 2 years.....	40
Simon Beery, Urbana, 2d best.....	20
Wright & Ross, Bucyrus, best boar under 1 year	25
J. H. Brotherton, Cedarville, 2d best	15
J. Browning, Washington C. H., best sow over 2 years	40
G. C. Foster, Richmondale, 2d best	20
Stanley & Wilson, Chillicothe, best boar under 2 years.....	40
J. H. Brotherton, Cedarville, 2d best	20
“ “ best sow with litter of pigs under 6 months old.....	50
Thomas Bennington, Laporte, 2d best	25
John Peterson, Springfield, best sow with litter of pigs over 6 months old.....	50
Jason Mahan, Allen's P. O., 2d best.....	20

AWARDING COMMITTEE.—David T. Colvin, George Barrett, D. Buck, J. M. Jackson.

ENTRIES OF SWINE—SWEEPSTAKES.

P. Buffenbarger, South Charleston, boar of any age or breed, (13 mos.,) “ Magie.

H. B. Clark, Springfield, boar of any age or breed, (5 mos.)

“ “ “ “
 “ “ “ (15 mos.)
 “ “ sow “ (5 mos.)

H. W. Buckman, Wakeman, boar of any age or breed.

“ “ sow “

Wright & Ross, Bucyrus, boar “

“ “ sow “

Henry C. Osborn, Westville, sow “

Noble Osborn, Westville, sow “

Jason Mahan, Allen's P. O., sow “

“ “ “ “

Jason & J. B. Mahan & Co., Allen's P. O., boar of any age or breed.

Jas. Whitely, Springfield, boar of any age or breed.

“ “ sow “

“ “ “ “

“ “ “ “

A. L. Bramble, Plainsville, boar “

“ “ fat hog.

Sam'l M. Pryor, Paris, Ky., boar any age or breed.

“ “ sow “

J. H. Brotherton, Cedarville, sow “

Jos. Work, Houston, boar “

“ “ sow “

L. Converse, Bucyrus, boar “

W. Craig Lee, Cross Creek, boar “

“ “ sow “

Jno. W. Cleeland, Springfield, boar of any age or breed.

" " " "

Austin McCreary, " " "

" " sow "

" " " "

" " " "

" " " "

" " " "

" " fat hog.

S. H. Todd, Wakeman, bear any age or breed.

" " " "

" " " "

" " sow "

" " " "

" " " "

John Peterson, Springfield, boar 9 mos. old, "Royal George IV."

" " sow 3 years old, "Sally."

A. J. Buffenbarger, South Charleston boar over 1 and under 2.

J. B. Mahan, Allen's P. O., boar over 2 years.

T. Browning, Washington C. H., sow 2 years and over, "Maggie."

" " " " "Molly."

" " " " "

J. E. Johnson, Clifton, Greene Co., bear under 1 year, "Black Jim."

" " boar 1 year and under 2 "Sam."

" " sow 2 years and over, "Sallie."

" " boar 6 mos. and over, "Bill."

" " sow "

Wm. Huffman, Harveysburg, boar 2 years and over, "Poland."

Chas. Stine, Fairfield, boar under 1 year, "Poland."

Ayres McCreary, Monroe, boar.

" " " "

" " " "

" " sow.

" " " "

" " " "

" " " "

" " fat hog.

Joshua Wolf, Byron, boar 5 mos. old.

R. E. Robinson, Bowlsville, boar 1 year and under 2.

Sam'l D. Shields, Paddy's Run, sow 2 years old.

" " " 1 year old.

" " " "

" " " "

" " sow with litter of pigs under 6 mos.

" " boar under 1 year.

" " fat hog.

" " " "

" " " "

Sam'l D. Shields, Paddy's Run, fat hog.

W. W. Greer, Oxford, boar 2 years and over.

" " boar, under 1 year old.

" " boar, "

" " boar, "

" " boar, "

" " boar, "

" " boar, "

" " sow, 2 years old and over.

" " sow, under 2 years.

" " sow, "

" " sow, with litter of pigs under 6 months.

" " sow, " " over 6 "

" " fat hog.

" " "

J. M. White, Springfield, sow, under 1 year.

J. H. Brotherton, Cedarville, sow, any age.

S. S. Staley, Mechanicsburg, sow, "

L. E. Parrott, Washington C. H., boar, any age.

" " boar, "

" " sow, "

" " sow, "

T. F. Parrott, " sow, "

" " sow, "

" " sow, "

Benj. F. Coffman, " sow, 2 years and over.

" " sow, over 1 and under 2 years.

" " fat hog.

W. H. C. McCoy, Lafayette, boar, any age.

" " sow, "

Joshua Browning, Plattsburg, boar, "

" " sow, "

Robt. McElheny, Union Village, boar, any age or breed.

" " sow, "

" " fat hog.

A. & D. Joy, Carey, boar, over 2 years.

" " sow, "

A. Lindsay, Washington C. H., boar, under 1 year.

Simon Beery, Urbana, boar, any age or breed.

" " boar, "

A. L. Bramble, Plainville, boar, "

" " sow, "

" " fat hog.

John McFadden, Cadiz, boar, any age.

Adam Garlaugh, Alpha, boar, "

Stanley & Wilson, Chillicothe, boar, any age or breed.

" " sow, "

" " sow, "

G. C. Foster, Richmondale, boar, any age or breed.
 " " boar, "
 " " sow, "
 " " fat hog.
 E. Newcomb, Dayton, boar, over 1 year.
 " " boar, under 1 year.
 " " sow, "
 R. White, Urbana, boar, any age or breed.
 Emory Smith, London, sow, " "Lady Morris."
 " " sow, "
 " " sow, "
 S. E. Merry, Milan, sow, "
 C. T. Crane, Plainville, fat hog.
 Thos. Bennington, Laporte, boar, of any age or breed.

AWARDS ON SWEEPSTAKES.

W. W. Greer, Oxford, best boar of any age or breed \$50
 Samuel D. Shields, Paddy's Run, best sow of any age or breed 50
 R. McElheny, Union Village, best fat hog 50

SECOND DEPARTMENT.

MACHINERY, ENGINES, ETC.

Brownell, Kielmier & Co., Dayton, best stationary engine \$100
 Clark Sintz, Springfield, 2d best 75
 Brown, Kielmier & Co., Dayton, best portable steam engine 75
 Garr, Scott & Co., Richmond, Ind., 2d best 40
 Dayton Gauge Co., Dayton, best steam gauge 10
 Knowles & Sibley, Warren, Mass., best steam pump 10
 R. R. Carpenter, Tippecanoe City, best preventative steam boiler explosion 10
 Reed & Bowen, Cincinnati, best tire upsetter 5
 Best domestic gas apparatus or model of Dip.

REPORT OF THE COMMITTEE.

Your Committee appointed to examine Book 27, Second Department—machinery, engines, etc.—would make the following report :

In the class of stationary engines, were three entries, viz. :

No. 1, G. W. Bigelow, Springfield, a small oscillating engine, three horse power, supplied with steam from one of "Anderson's steamers." It was nicely finished, and ran well, but had little work to perform.

No. 14, Clark Sintz, Springfield, an oscillating engine, 35 horse power, supplied with steam from a new boiler of Russell's design. To this engine was given the second premium, as, from its general design, the Committee thought it worthy, but through some

unfortunate occurrence, the steam supply was not what was required to show its power and efficiency, nor was there any work for it to do.

No. 17, Brownell, Kielmier & Co., Dayton, a plain side-valve engine, of 30 horse power, giving the power necessary for Power Hall (being supplied with steam from one of their own boilers). To this engine was awarded the first premium, as it was considered so worthy. It ran well during the Fair and gave good satisfaction.

Under the head of portable engines were 11 entries, of which eight were on the ground and running, viz. :

No. 6, Jacob Bowman, Donaldville, a portable built at Lancaster, Pa.

No. 7, Helbert & Page, Painesville, a portable engine and road steamer, the invention of one Rider.

No. 8, Gaar, Scott & Co., Richmond, Ind., a very good portable engine, to which was awarded the second premium.

No. 9, John A. Shoemaker, Richmond, Ind., a portable, also of good design and finish, very similar to the preceding.

No. 15, Clark Sintz, Springfield, an oscillating portable engine, the only one of the kind on the grounds, and possessing some novel features and good points.

No. 18, Brownell, Kielmier & Co., Dayton, a small short stroke, quick moving and powerful portable, which, though not as finely finished as some of the others, possessed some very desirable features, and to which was awarded the first premium.

No. 20, J. Windermaker, Harmony, Clarke county, a portable of C. & G. Cooper's make, Mt. Vernou, which, though it had done work all this last season, and satisfactorily, still some of its features were not considered very favorably by your Committee.

No. 21, A. Purdom, Chillicothe, an engine of Welsh & Co.'s make. This engine has something of a reputation, but also some objectionable features.

Your Committee did the best in their power to make these awards properly, but found it extremely difficult in some cases, to decide between two engines, both possessing good features.

The portable of Brownell & Co., Dayton, No. 18, had the best boiler, a large fire box, plenty of heating surface, a good-sized dome to give a free supply of dry steam, and a simple, compact and superior pump, a most essential adjunct to the engine.

The Gaar & Scott, of Richmond, Ind., No. 8, was a finer finished engine than Brownell's, and a very quick running, but the boiler and feed pump, your Committee did not think as good as Brownell's.

Your Committee wish to call the special attention of the Board to the road steamer and portable engine of Hulburt & Page, Painesville, No. 7, as being worthy a special commendation. The machine consists of a portable engine resting on a frame supported on four high wheels, connection with two of which is made by gearing, and a belt from the pulley of the engine, so that the steamer can traverse ordinary roads, and over quite rough grounds. The inventor, Mr. Rider, uses this engine in connection with one of Russell's threshing machines, drawing the thresher after the engine from farm to farm, setting it up in the desired place, then putting the engine in its proper position, and in trim, when, by throwing off the connection between the engine and driving wheels, he is in position and ready to run the thresher. It was remarkable with what ease this machine could be manipulated to place it in position to run a threshing machine as he did on the grounds; going to their different threshers, placing it in position by its own power, putting on the drive-belt and going to work all in the short time of about five minutes.

Your Committee consider that the merits of the machine should receive due attention,

and a suitable acknowledgment by means of a premium, and would respectfully urge the Board to take liberal action in this matter.

Your Committee would also respectfully call the attention of the Board to their great labor and difficulty in making the proper award between the several engines exhibited, having no accurate means of testing their power, efficiency, economy, &c., all points of importance in determining the relative value of different engines.

And your Committee would further suggest to the Board the propriety of making proper arrangements, in due time, before another exhibition, advertising the same to the engine builders of the country, and taking such time and having such a committee as can make a just and fair award on the best engines.

We would suggest three premiums be offered, and that they be of such size and value as to induce a free competition from the engine builders. The tests should be severe, scientific and practical, consisting of dynamometer and indicator tests, especially, speed of firing, amount of fuel, water, oil, &c., used, to determine their economy, &c. Also, from the difficulty in determining calorific co-efficient of different fuels, let all engines be furnished with the same fuel.

The awarding Committee should consist of at least five members, and would be better they should be men of experience, and some scientific attainments, and, if possible, having no immediate interest in the manufacture of engines at the time of exhibition. Three should be taken to make these tests, that they may be properly done, as your Committee feel fully convinced that this is the proper way of determining the relative merits of the engines. The use of portable engines in the country is large and constantly increasing, and your Committee think this subject of enough importance to the State to have liberal premiums offered, to call out the competition from the engine builders to make a worthy show, and give the subject the consideration it deserves.

Under the head of steam pumps there were four entries, of which your Committee examined two, viz: No. 2, Knowles & Sibley, and No. 4, Columbus Machine Co. Your Committee gave the first premium to Knowles & Sibley, No. 2, as it ran all the time of the Fair, supplying the feed water for Brownell's steam boiler, but the Columbus Machine Company pump did not make any connection, and did not run, hence, your Committee could not give it the premium, having no positive test of its efficiency, though from an examination of its working points, they considered it the best pump, for general use, from its extreme simplicity and durability of working parts.

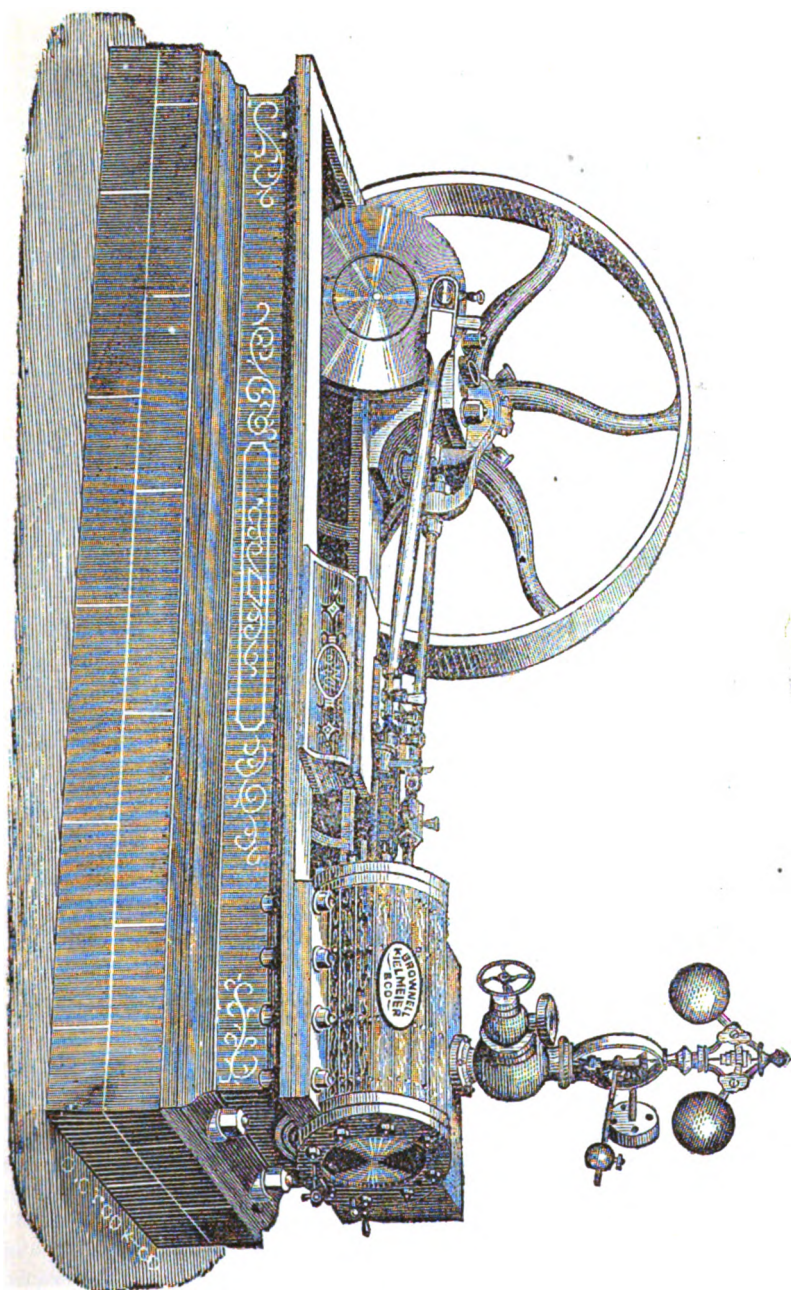
The saw gummer, No. 19, of Brownell & Co., was a small hand machine, and your Committee did not consider it worthy of the premium equal in value to itself, nor could they award the premium to Reed & Bowen, No. 22, as their machine consisting of a punch and shears combined, had a gummer attachment, which, however, they did not exhibit.

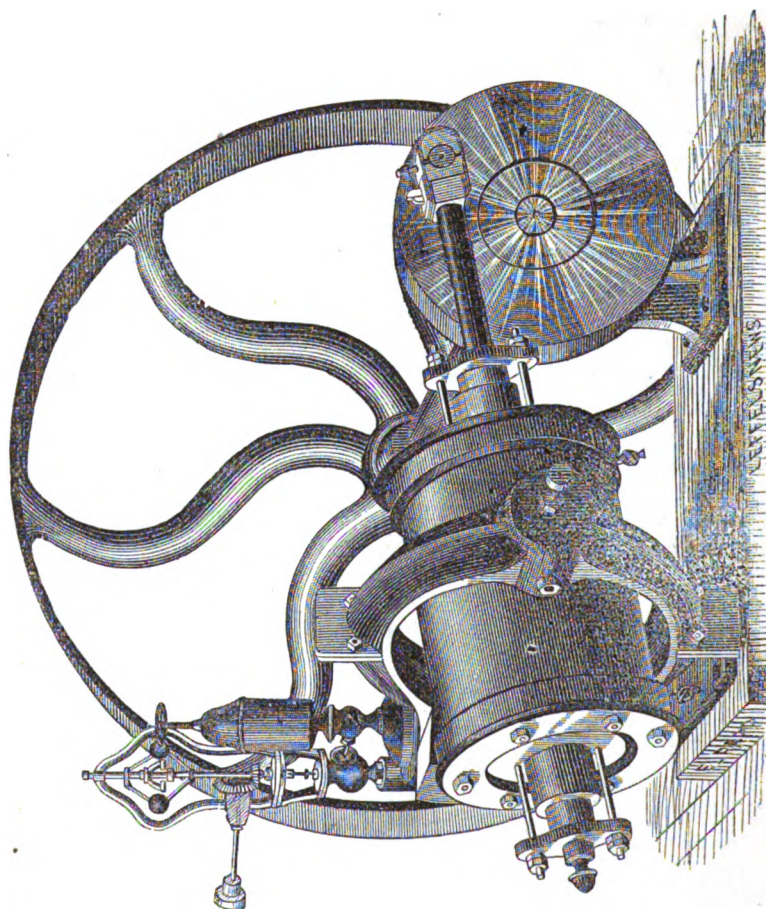
Hoping this will be satisfactory to yourselves, we remain

Very respectfully,

A. L. CROSBY,
JOHN H. WARDER,
S. P. SEFFNER,
J. B. MCCLINTON.

BROWNELL, KIELMEIER & CO.'S STATIONARY ENGINE.





SINTZ'S IMPROVED OSCILLATING ENGINE.

COMPACT, SIMPLE AND ECONOMICAL.

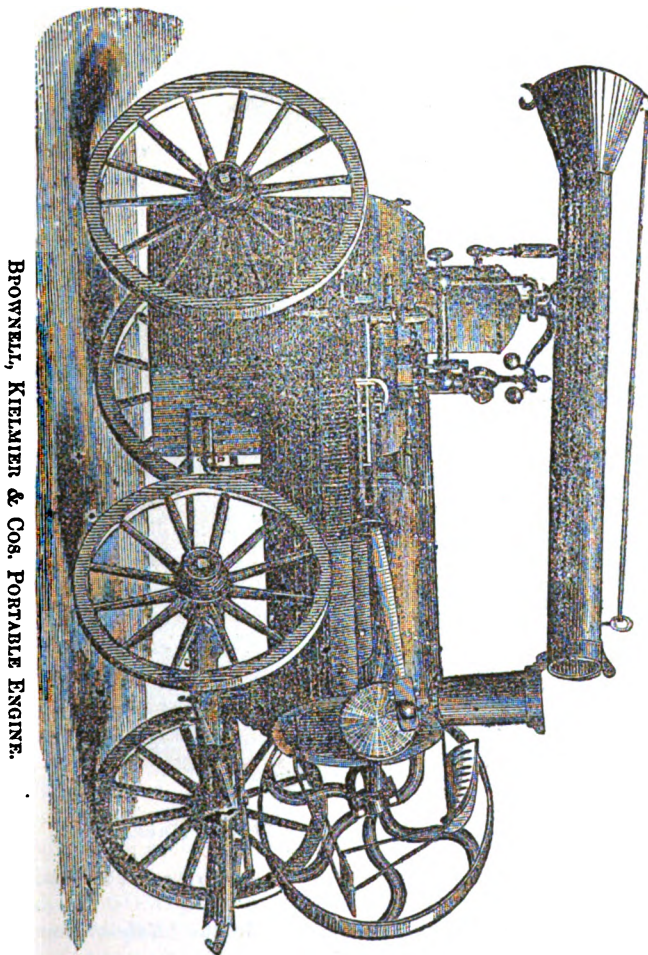
The attention of manufacturers using steam power is called to this improved engine, and especially to the construction and arrangement of the steam-chest and cylinder, and the economy in cost of manufacture resulting from the simplicity of the machine. It is adapted to any size and capacity of engine, and to any description of work to which steam power is applicable.

The steam-chest is cast in two boxes of equal size. One of these boxes receives the live and the other the exhaust steam; and each end of each of the boxes or divisions of the chest is provided with a port. The partitions between these ports correspond with the valve ports at either end of the cylinder. It follows that in the oscillation of the cylinder the ports in the live and exhaust steam boxes at each end of the steam-chest are alternately opened for communication with the cylinder in such a manner that the live steam is admitted at one end simultaneously with the escape through the exhaust port at the other.

The valve is flat, and is kept steam-tight by means of a set-screw on the outer trun-

nion, as shown in the cut. To prevent wear on the set-screw and the trunnion, rings are placed between them. These may be made either of metal or raw-hide, both materials being serviceable for the purpose.

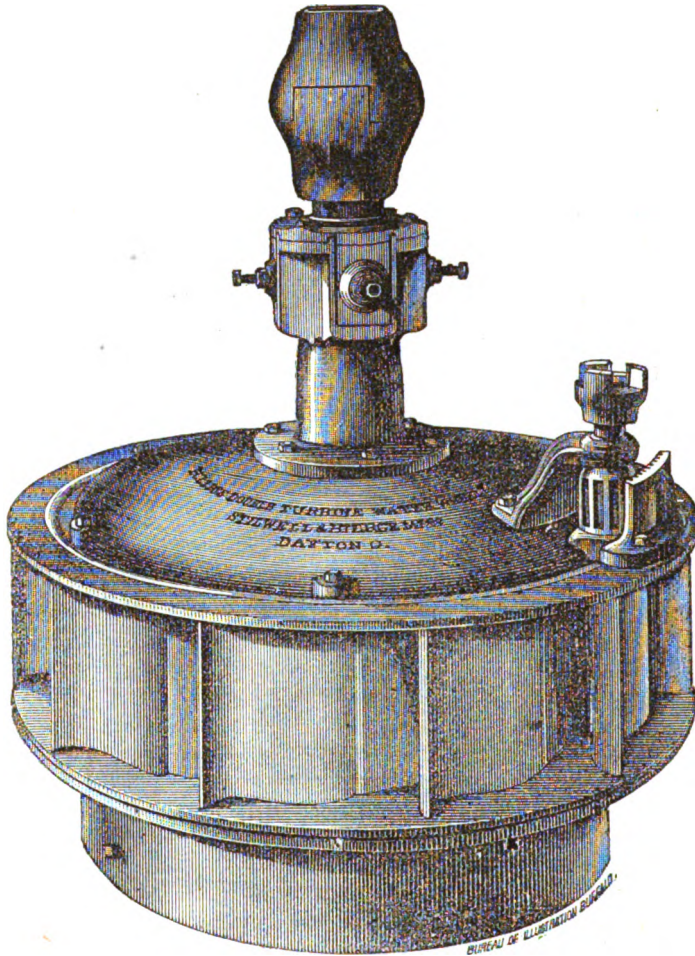
The steam-chest and bed are cast in one piece, the foot being joined with the other portions by a connecting arm, which the cut, by an inadvertent omission, fails to show. A circular arm encloses the cylinder, half of the arm being cast with the steam-chest. One of the bearings for the trunnion on which the cylinder is supported is in the steam-chest, being an adjustable box regulated by means of keys. The other bearings are on the other half of the arm, the box being adjusted either with keys or set-screws.



BROWNELL, KIEHN & CO. PORTABLE ENGINE.

SHOP MACHINERY.

Frank & Co., Buffalo, N. Y., best moulding machine.....	\$10
Joseph Herhold, Dayton, best scroll sawing machine.....	25
Frank & Co., Buffalo, N. Y., best wood planing machine.....	25
Stilwell & Bierce Manufacturing Company, Dayton, best water wheel.....	20



ECLIPSE DOUBLE TURBINE WATER WHEEL.

Manufactured by Stilwell & Bierce Manufacturing Co., Dayton, O.

The most prominent points of advantage claimed by the "*Eclipse*" over other wheels, may be briefly stated as follows:

1st. The manufacturers claim that it is the most powerful wheel of a given diameter in the market.

2d. It is the simplest wheel in use, being composed of the smallest possible number of parts, viz: The wheel is one casting; the wheel case is one casting; the register gate is one casting.

3d. All of its separate parts are fitted up by machinery to a standard gauge—all guess-work being dispensed with, so that, in case of accident, duplicate parts which will fit, can be furnished.

4th. It is entirely devoid of bolts, rods, levers, light castings or "traps" of any kind, to get out of order and give trouble.

5th. Its percentage of power at full gate, is warranted by the manufacturers to be equal to any wheel in use; while at partial gate, it does not fall behind any other wheel.

The "Eclipse" is equally well adapted to high or low heads; is not affected by back-water; is not easily clogged, and will afford a steady reliable power, under circumstances so unfavorable as to preclude the use of many of the other forms of water motors.

The tables of power published by its manufacturers are based upon actual results, obtained in tests of different sized wheels, with "Emerson's Dynamometer," and may be relied upon as substantially correct.

The manufacturers of the "Eclipse" have erected, at their works in Dayton, Ohio, a complete Testing Flume, equipped with "Emerson's Improved Dynamometer"—being the same machine that Mr. Emerson has used at his Lowell Testing Flume—and they invite customers to come and prove the merits of the "Eclipse," before the delivery of their wheel. This is a guaranty of fair dealing, and against misrepresentation.

HAY AND HARVESTING MACHINES AND TOOLS.

P. P. Mast, Springfield, best grain drill (2 horse).....	\$50
D. E. McSherry & Co., Dayton, best grain drill (1 horse)	10
Rice & Co., Springfield, best garden seed drill	5
John Dodd & Co., Dayton, best grass broadcast sowing machine.....	5
Springfield Manufacturing Co., Springfield, best corn planter (horse power)	20
Joseph Smith, Elyria, best potato digger.....	10
Deere & Co., Moline, Illinois, best corn cultivator (2 horse).....	10
Wm. A. Nixon, Alliance, best corn cultivator (1 horse).....	5
Dayton Machine Co., Dayton, best horse hay-rake (wheel).....	10
Tiffin Agricultural Works, Tiffin, best horse hay-rake (revolving)	10
A. J. Nellis & Co., Pittsburg, Pa., best horse hay-fork	5
J. W. Akerman, Center Village, best horse hay-fork and stacker combined	10
Fred Decker, Delaware, best clover seed harvester	10
L. F. Parker, Davenport, Iowa, best grain binder.....	5
Whiteley, Fassler & Kelly, Springfield, best display haying and harvesting tools....	10
Champion Plow Works, Springfield, best farm road scraper.....	10
A. Birchard, Indianapolis, Ind., best field roller and crusher.....	15
G. E. Hutchinson, Cleveland, best harrow	10
Champion Feed Cutter Co., Marietta, best hay and straw cutter.....	10
Climax Reaper & Mower Co., Corry, Pa., worthy improvement in reaping, mowing or combined machines, made since the field trial at Mansfield, July 5-8, 1870.....	Dip.

REPORT OF COMMITTEE ON HAYING AND HARVESTING MACHINES AND TOOLS.

Your committee found the display of harvesting machines and tools in great variety; also show evidence of continued improvement, both for workmanship, and their adaptation to the work they were intended to perform. The number of articles exhibited were so many that we found great difficulty in finding and giving each article a proper examination.

Your committee would respectfully suggest that articles should be classified with care and accuracy, so that committees making examinations will be better able to find such articles with ease. This would greatly promote the good results desired by examination.

Find different articles as awarded according to instructions in your rules.

A. GASKILL,
JACOB ROHRER,
ROBERT BROWN.

BUCKEYE FORCE FEED GRAIN DRILL AND GRASS SEED SOWER.



DESCRIPTION OF GRAIN DRILL AND GRASS SEED SOWER.

During the past year several valuable improvements have been made and applied to these machines. This drill has the feeders inclosed in iron cups beneath the hopper, and the quantity of seed sown is regulated entirely by the speed of the feeder, and can be varied from three pecks of wheat to three bushels of oats. These changes are produced by the use of a series of cog-wheels of such size as to produce the exact number of revolutions for a given quantity. The arrangement of gear for this purpose is so simple as to be easily understood.

NEW METHOD OF CHANGING HOES FROM STRAIGHT TO ZIGZAG.

By a new and simple device the hoes may be changed from a straight line to zigzag, and the reverse, whilst the drill is in operation, merely by moving a lever, without stopping the team. There is also another method of changing from straight to zigzag, and the reverse, similar to the first but without the lever, simply by removing two bolts which hold the sliding bar and changing its position. By this method this change can be made in less than three minutes.

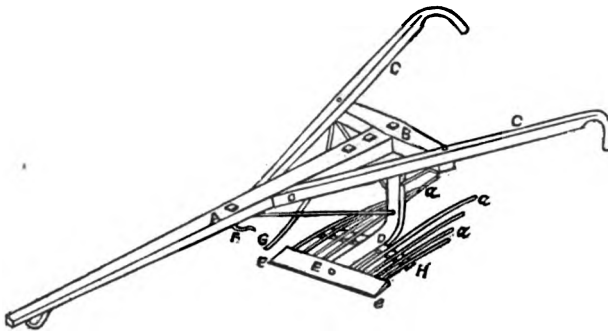
NEW METHOD OF ATTACHING GUM TUBES.

The tubes are attached to a conductor, which is pivoted directly to the hopper in such a manner as to adapt themselves to the hoes when they are changed from straight to zigzag without detaching the tubes. This arrangement dispenses with the tube board, makes the drill lighter, and gives it a much neater appearance, and the grain is brought plainly in view while passing from the hopper to the hoes, whether the hoes are set in line or zigzag, and the feeders are thrown out of gear when the hoes are raised out of the ground.

The manufacturers offer the Buckeye as a combined drill and broad-caster. They have added the broadcast attachment to it, thus combining two machines in one, at a small additional cost to the farmer, and thus, by buying a Combined Buckeye Drill, a complete broad-caster, and a complete drill with grass seed sower, are secured.

It is claimed for the Buckeye drill—

- 1st. It will sow wheat, rye, oats, barley, buckwheat, clover and timothy seed.
- 2d. Never bunches grain. It will distribute the grain and grass seed evenly and regularly.
- 3d. It will never break the grain.
- 4th. It sows grass seed, broadcast, behind the drill.
- 5th. Has high wheels and wide tire.
- 6th. Long hoes and wide steel points.
- 7th. Has a good surveyor or land measure.
- 8th. Grain and grass seed shut off when hoes are raised.
- 9th. It will not clog in trashy ground.
- 10th. It is substantially made.

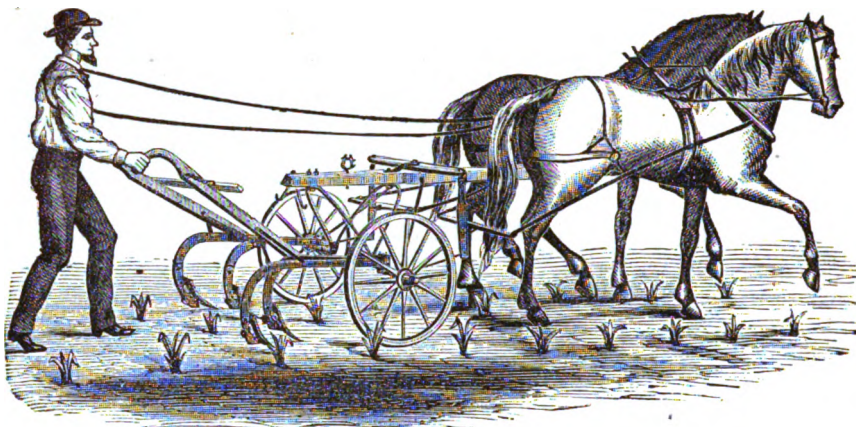


POTATO-DIGGER.

The drawing shews the whole machine in perspective.

The machine consists essentially of a tongue or pole, A, with its cross-piece, B, to which the handles, C and C, are attached. D is an iron bar or shaft, of sufficient size to give the required strength to carry steadily the cutting-edge. If made of one inch and a half square iron it will be abundantly strong. The top of this bar is bent forward and forged, so as to be firmly bolted to the pole A and cross-piece B. Its lower end is also bent downward and forward, and to its lower end is welded or firmly attached in some other way the cutting-edge E. The cutting-edge is straight, placed at exact right angles with the line of motion, and is inclined downward at an angle of about twenty degrees, so that a slight pressure on the handles shall cause the edge to penetrate to any required depth. This cutting-edge is about one foot long, and may be four or five inches wide. The standard or bar, D, has attached to it, at a point near that at which it is bent forward, an arched brace, H, a part of a circle of about twenty inches in diameter, the purpose of which is to hold the iron sifting and inverting rods, a, a, a, a, a, a, a and a. These rods are firmly attached to the cutting-bar, and also to the arc H, and are so bent as to conform to the general form of a well-shaped mold-board of a plow. The spaces between them allow the earth to sift between them, but are so close together as to allow no potatoes worth saving to pass through. The general shape of these rods in combination is such that they invert the earth on each side, leaving the potatoes on the top of the loosened earth, or in the row behind the digger. The rod F is a brace or stretcher, and to this the draft is applied, or applied to the stem near the point D. G is a guard or guide-rod attached to the upper part of the frame, and descends diagonally forward, so that it crosses the center line of the machine and ends about one foot above the cutting-edge, e e'. The purpose of this guide is to turn aside the tops of potatoes or weeds, and thereby prevent the clogging of the machine.

The cutting or penetrating edge of the digger goes freely into the ground and passes under the whole hill, and as it is at right angles with the line of motion, there is no lateral displacement or tendency to jump sidewise, as there is with pointed or curved cutting-edges. The angle at which the tool rises from e e' is such (from twenty to thirty degrees) that it tends to break up or pulverize the earth and effectually loosen the potatoes from the earth in which they have grown.



WALKING CULTIVATOR "ADVANCE."

Manufactured at Moline, Ills.

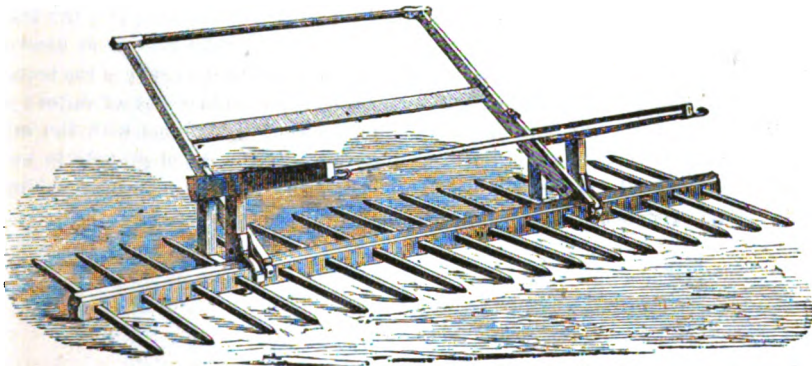
John Deere's Walking Cultivator, the "Advance," has the following points: Its double-arched wrought-iron frame gives great strength, and enables the operator to use a single tongue, affording facility in turning, and less liability to accident. Its height of axle gives clearance for tall corn. Its whippetree lowered to the direct line of draft relieves the downward pressure on the end of the tongue. Its improved safety break relieves the shovel and beams from extraordinary strain when meeting an obstruction. Its wrought-iron coupling gives great strength and durability to this, the vital point in all cultivators. Its shovels are adjustable to deep or shallow work as well as to throw the soil either way. It is essentially a wrought-iron machine. Either wood or iron beams furnished according to preference. These improvements commend themselves to the farming community, and you have only to examine the "Advance" to be convinced of its efficiency.



SULKY RAKE.

The construction of the Improved Dayton Sulky Rake is of the most simple form, and there being no very small bolts or set screws about it, there is but little liability of its getting out of order. It can be readily adapted to all kinds of raking, by changing a slot in the lever, and is so constructed that the teeth play lightly over the ground with-

out scratching, yet raking perfectly clean. The teeth are entirely unconnected, and can be removed or replaced without disturbing each other, being hinged on the axle by a patent adjustable fastening, to which we call special attention, being superior to anything in use, attached to a rake for the purpose of preventing the lateral motion of the teeth. Six inches from the axle is a bar, underneath the teeth, on which are arranged patent guide standards, with spiral springs, pressing down on the teeth, thereby allowing each tooth to adjust itself to rough places on the ground, and also preventing their liability to break. A lever is conveniently placed near the seat, which is easily drawn toward the operator, raising the teeth above the clearing bars, thereby discharging every particle of gathered hay or grain. The teeth are made of the best quality of steel, tempered in oil.



THE BARNES RAKE.

The head and frame are made of the best quality of ash timber, thoroughly seasoned ; the teeth are of hickory ; nine feet head, with sixteen teeth ; head and frame varnished ; teeth oiled with linseed oil.

The points of excellence claimed are the following : The head, being mounted on runners, is carried clear of the ground, and runs much easier and steadier than the ordinary rake. The upright posts of the frame and the tripping device being entirely in the rear of the head, more hay can be carried before tripping. The stops, attached to the head and lugs on the side arms, forming the tripping arrangement, are of iron, and consequently will not wear out so readily. The side arms being hinged so near the head and the leverage being so short, the rake will trip very easy. The lock is sure and the rake cannot revolve, except at the will of the operator.

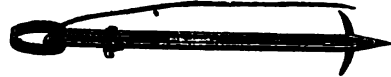
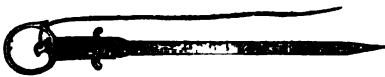
NEILLIS' GRAPPLE.

Patented March 1, 1870.



This simple and practical device will overcome the great inconvenience and danger that has been experienced in putting up and taking down horse hay fork pulleys; also, various other purposes in which the farmer has frequent occasion for its use. It is novel in its construction, and requires but a few moments to become familiar in putting it up or taking it down, or changing from one point to another, which can be done in a few moments' time, without a ladder, thereby enabling the operator to convey or deposit the hay at almost any desired point or direction. It is deemed indispensable by all farmers who have become familiar with its convenience, as its nominal cost is no consideration compared to its value and advantages.

Directions for Using.—To put it up, insert the holder into the end of a pole the length required to reach the point desired to affix the pulley. Put on the grapple as described in the cut, and to it hook on the pulley, with the rope in for use; raise it to the required place, so the end of the fork or prongs of holder rests against the center of rafter (joist or beam), holding it up firm with one hand, and take hold of the rope with the other, and give the rope a short quick outward swing; this will cause the grapple to swing from the socket, and the points will cleave firmly to the desired place. In attaching to brace or rafter of an acute angle, always stand with your back towards it.

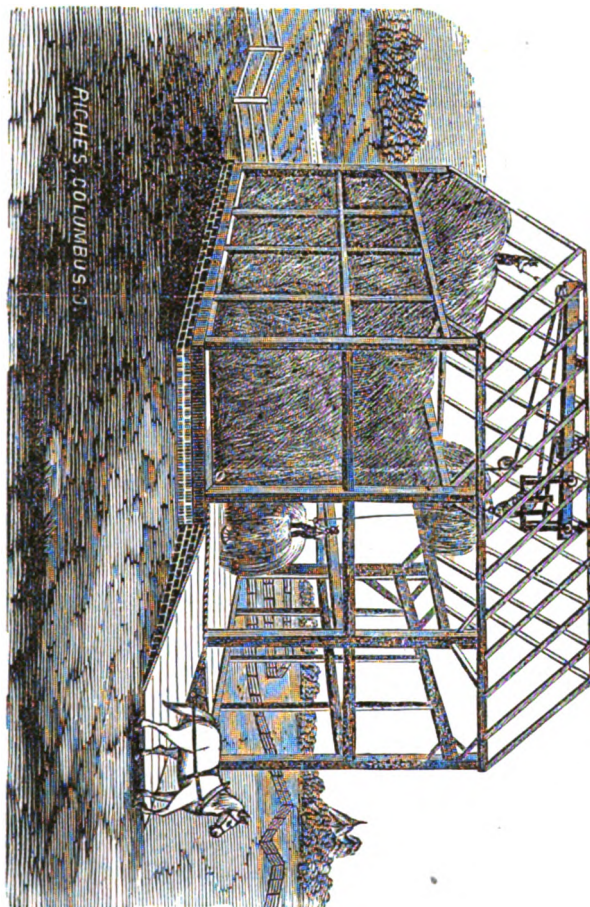


HARPOON HAY FORK.

EXCELSIOR HAY ELEVATOR AND CARRIER.

The following is a representation of Crane's "Excelsior" Hay Elevator and Carrier, patented by F. A. Crane, of Zanesville, Ohio, and exhibited by J. W. Crane, of Centreville, Delaware county, Ohio, the object of which is to facilitate the operation of any horse hay fork. Fig. 1 shows the mode of operating it in any barn.

Fig. 1.



EXCELSIOR HAY ELEVATOR AND CARRIER.

Fig. 2.

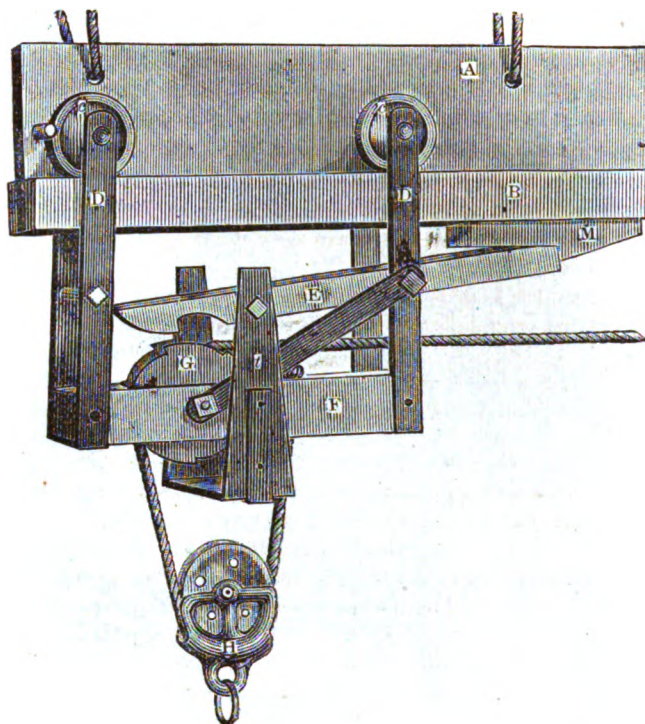


Fig. 2 shows the construction of the Elevator and a part of the track.

THE TRACK.

The track consists of the plank (A), which is from 9 to 13 inches wide; and from 1 to $1\frac{1}{2}$ inches in thickness. Auger holes through the upper edge of this plank, receive the ropes or chains by which the track is tied to the rafters. The lath (B), which should never exceed $2\frac{1}{2}$ inches in width, is firmly nailed to the plank (A), one on each side and even with the lower edge. Upon these lath the track-wheels (cc) travel. The pin through the track in front of the truck-wheel (c) is to prevent the Elevator from running off the end, and can be taken out when the Elevator is moved from one track to another.

Instead of the plank (A), a joist of scantling, 5 or 6 inches wide and $1\frac{1}{2}$ to 2 inches thick, may be used, (see Fig. 1, first page.) And instead of passing the supporting ropes or chains through auger holes in the plank, pass them through the eyes of half inch bolts, which pass through the scantling. The tap or clenched end of these bolts are counter-sunk in the wood, to prevent their interfering with the end of the lever (E), as the elevator passes along the track.

THE ELEVATOR.

The Elevator is constructed of iron and wood, well bolted together without complication; and is warranted to stand rough usage. (M) is the wood catch on the bottom of the track which holds the Elevator stationary, till unlocked by raising the pulley (H), to which the fork is attached, against the trigger (t), when the Elevator with its suspended load of hay is drawn along the track, over the mow, and the hay discharged from the fork, by the trip-cord extending to the person on the wagon.

After the end of the lever (E) passes (M), the other end provided with a catch, drops into the notched pulley (G), and by thus locking it, prevents the Elevator from running faster than the horse, and the hay from lowering or dragging on the cross-beams, while passing into the mow.

No particular fork has been recommended, as the Elevator is adapted to any kind, from the heaviest tine, or grab-fork, to the lightest harpoon or cutter.

ADVANTAGES.

The following are a few of the advantages claimed for the invention:

1st. The hay is not drawn up into the mow by *one* rafter alone, thus endangering its being pulled out, but *by all the rafters* to which the track is fastened.

2d. The hay in raising, *does not swing against the side of the mow*; consequently no boards need be nailed up for the hay to slide upon. The rope is *not worn out* by sawing on the ties, nor the horse stalled by the hay catching under the cross-beam.

3d. It raises the hay *perpendicularly* from the load, and hay falling from the forks falls on the load again, and not between the wagon and mow.

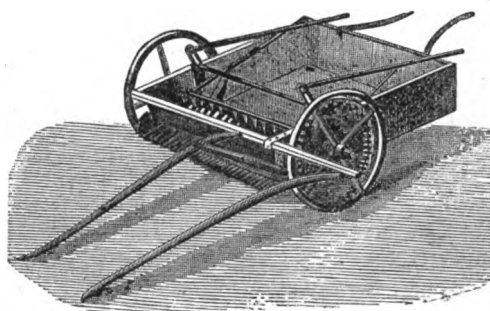
4th. The hay is not dropped in the front of the mow, in one pile, but *carried to the back part*, or middle, where *one* man can dispose of it, more easily, than *three* can, when it is dropped in one place only.

5th. By thus keeping the back part of the mow the highest, the *hay is easily rolled out* for feeding in winter.

6th. The *double rope* from the Elevator to the fork, and the absence of the dragging of the hay, enables one horse to raise the load more easily than two, with a single rope, consequently a rope heavier than three-quarters of an inch is never required.

7th. By simply projecting the track three feet from the end of a horse or sheep stable mow without any outward support, the Elevator may be used with great advantage, where it would otherwise be impossible to use a horse fork. Hay is thus easily carried over beams, within six feet of the comb, and the track can be spliced, and made as long as desired. After the hay is discharged, the fork is held close up to the Elevator by the trip-cord, thus requiring no weight, rope or extra pulley to return it.

The Elevator is also a complete arrangement for elevating loads into warehouses and mills, stone from quarries, and coal from coal-pits, and is much cheaper than Elevators commonly used for that purpose. The track is constructed of material found on every farm, and nothing but nails required for putting it together. The Elevator is simple of construction, with nothing likely to wear out, or get out of order.



DECKER'S CLOVER AND GRASS SEED HARVESTER.

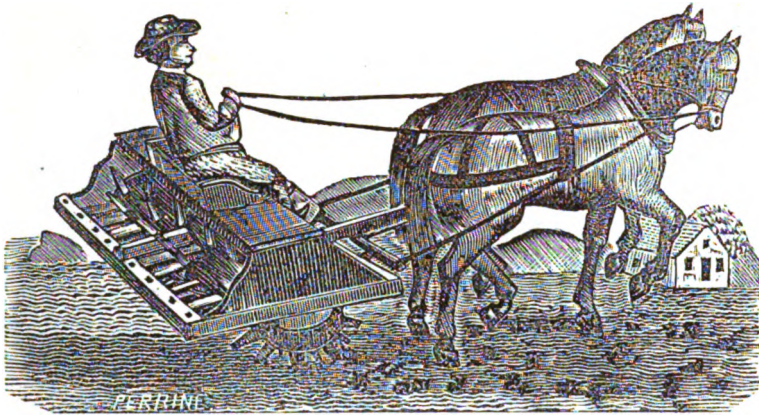
The above cut represents a new and novel means for adjusting the gathering apparatus, of a Clover Seed or Head Harvester, whereby the machine may be made to gather from short or tall clover, on the side of a hill and on very ununiform land. It gives an external as well as an inside view of the machine. The cogs, as shown inside of the driving wheel, turn a cylinder in which are placed flat steel teeth in a spiral form, nicely adjusted to the fingers underneath, which, with the teeth, bring the clover heads in contact with the cutting bar, which is firmly secured at the back part of the fingers. There is also a sheet-iron concave (not shown in the cut) which extends over the cylinder to within three inches of the fingers, and prevents the teeth from throwing heads over the machine in front. The rake shown on inside of machine is carried back and forth by a crank shaft, placed on the top edge of machine. The slotted castings, shown on the outside, are made in a circular form, and so arranged that the machine can be raised and lowered on the wheels at pleasure, without throwing it out of gear. The shafts are so attached that the horse need not tread on the ungathered seed. The handles on the back part of the box give the operator perfect control of the machine.

L. F. PARKER'S TWINE GRAIN BINDER.

This machine is designed as an attachment to a reaper to bind the grain with twine before it falls to the ground. Its action, beyond the revolving of its driving shaft by driving wheel of reaper is entirely automatic. It may be attached to any reaper that will deliver gavels of grain, by rake or otherwise, within reach of its revolving arm. This arm, by means of strap and spring, causes gavel to be compressed as tightly as desired. It also, by means of primers on its end, carries twine (drawn from spool) around the gavel, bringing it together to be tied by the knot-tying apparatus into a firm, reliable knot, when the twine is cut off, and the gavel falls to the ground securely bound.

Machine being properly built, the jar of reaper has no effect upon it whatever, and it is as little liable to get out of order as the best sewing machine.

Machine exhibited as attached to Parker's Self-Raking Reaper and Binder has done good, reliable work in the field, cutting, raking and binding without assistance.



OKEY'S CLOD CRUSHER AND GROUND PULVERIZER.

Exhibited by A. Birchard. This machine has been in use for the last year, and has given satisfaction to all who have used it.

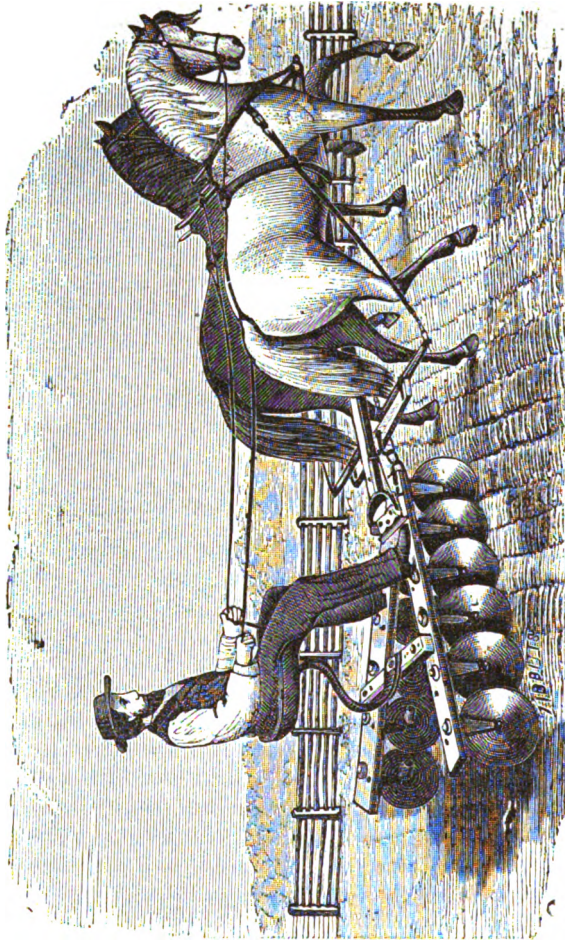
NISHWITZ'S HARROW AND SEED COVERER.

This harrow consists of a series of revolving sharp-edged, circular, concave disks, set at such an angle in relation to the line of draft, that they fully pulverize the soil by cutting, lifting and turning it over in fine, small furrows. The frame consists of two pieces of wood, hinged together in front, which are secured at any desirable distance apart by means of a cross-bar, bolted across the center of the frame. To this cross-bar is attached a comfortable spring seat. For purposes of storing or transportation, the frame can be folded together. It is extremely simple in construction, and not liable to get out of order. By means of a scraper, against which the concave, circular disk or tooth revolves, it is kept clean or scoured in the most adhesive Western soils.

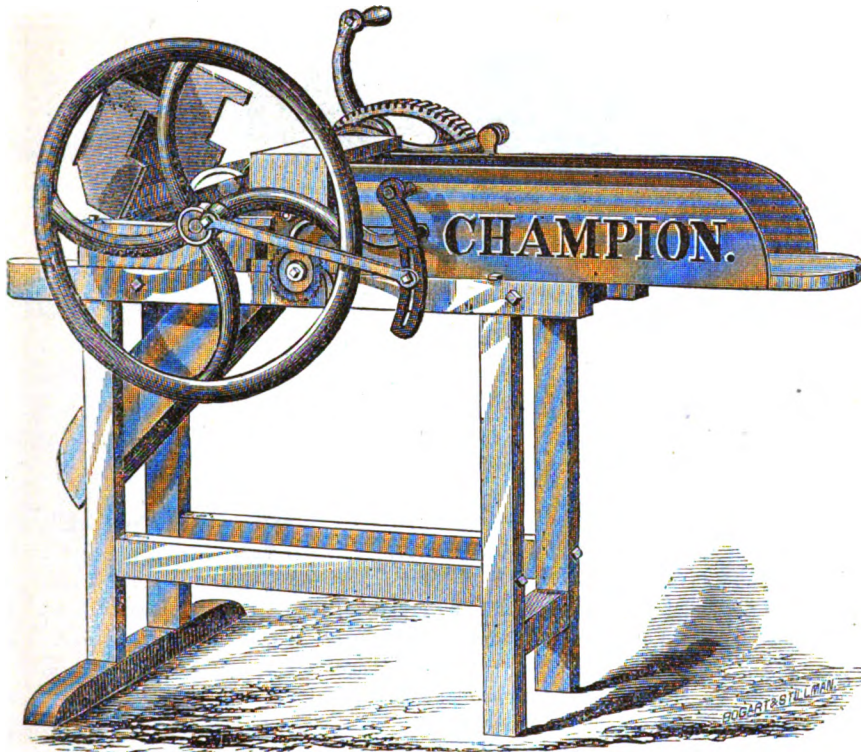
It is claimed that it has many advantages over every other harrow or cultivator, in that it will enable the farmer to ride with as much comfort as he would in a wagon, instead of trudging over rough land, and at the same time it will thoroughly pulverize the soil, where the common harrow will only scratch the surface. It will thoroughly mix the soil and fertilizers. It will not catch weeds, stubble, coarse manure, or roots, and clog up like a common harrow or cultivator, but will cut and mix them with the soil. It will not turn up the sod when using it on sward land. It will thoroughly prepare land for the seed-drill. It will cover grain as well as the seed-drill, and in many instances even better. Land plowed in the fall can be prepared for crops in the spring without re-plowing. It is a good implement for pulverizing newly broken land. For summer fallowing land, it will work up the soil, and is sure to kill all weeds. It is good to remove moss or sod-bound meadows. It is a perfect implement for scarifying

meadows and pastures, where the grass has run out, and it is desirable to re-seed without plowing. It is a good clod crusher. It is a splendid corn cultivator, for young corn. It covers corn very nicely and rapidly. It is good for every other purpose where a harrow can be used. It is durable, and is easily and cheaply repaired when worn out.

See report of committee on trial of implements at Springfield, June 13, 1872.



NISHWITZ'S PULVERIZING HARROW AND SEED COVERER.



CHAMPION FEED CUTTER.

(Patented May 9th, 1871.)

The advantages claimed for the "Champion" are that—

It will cut very fast.

It will cut the material long, or

It will cut it short.

It cuts very easy.

It is strongly built.

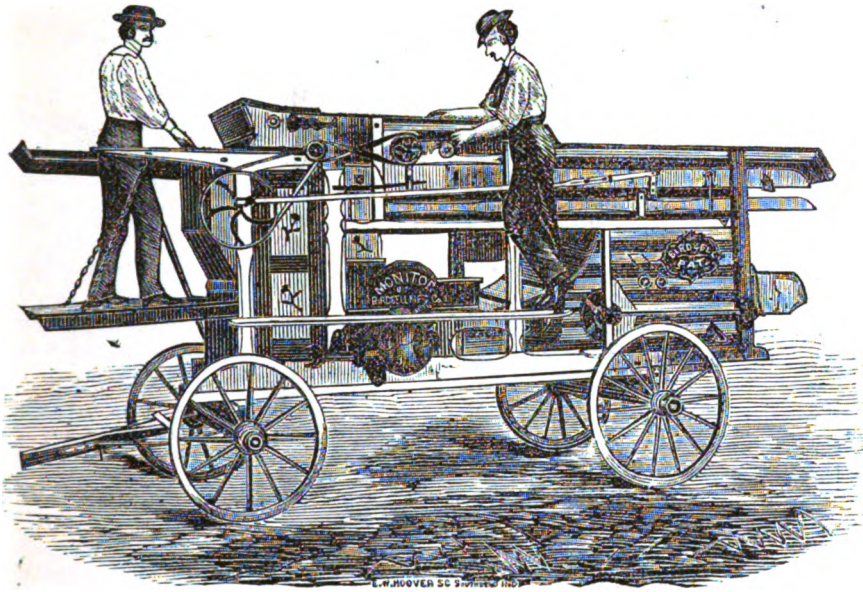
It will not overturn.

It will cut all kinds of feed, including corn stalks with the ear on.

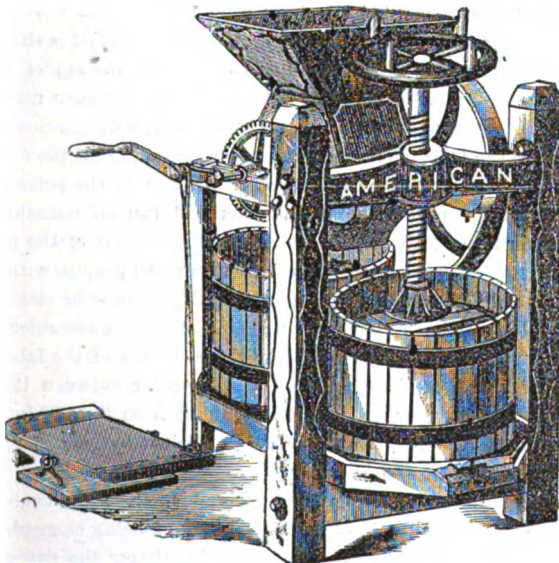


 AGRICULTURAL MACHINES—FIRST DIVISION.

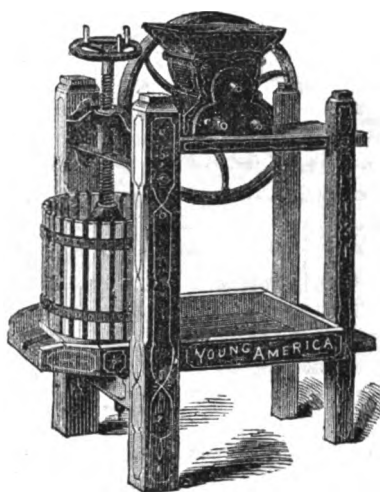
Aultman & Taylor Manufacturing Company, Mansfield, best threshing Machine....	\$75
F. D. Prouty, Columbus, best clover huller.....	20
Birdsall Mfg. Co., South Bend, Ind., best clover huller and cleaner.....	20
Sam'l Males, Cincinnati, best cider mill and press	10
Eagle Machine Co., Lancaster, best corn sheller (power).....	10
“ “ “ (hand)	5
A. Pritz and Son, Dayton, best smut machine	25
Sedgebeer, Painesville, O., best farm feed mill	20
B. Cortrite, Norwalk, best fanning mill	10
Rice & Co., Springfield, best platform scales	5
“ “ best display of scales.....	20
“ “ best stock scales for general purposes	20
P. P. Mast & Co., Springfield, best agricultural boiler	5
Jordon & Co., Springfield, best well pump.....	5
Brown & Wheeler, Cleveland, best apparatus for raising water	10



BIRDSALL & Co's MONITOR CLOVER HULLER AND CLEANER.



AMERICAN WINE AND CIDER MILLS.



YOUNG AMERICA WINE AND CIDER MILL.

This cut and the one on the preceding page represent only the general appearance of the "American" Cider Mills, which are gotten up on a principle entirely different from other portable mills. Every farmer knows that no portable cider mill has hitherto been made to equal the old-fashioned power machine, formed of two upright grooved rolls, working into each other. Inventors have started out with the idea that it was better to grate the fruit, and most portable mills have been built on this mistaken notion. A moment's reflection and a very short trial will prove which method is the best. The top roller, furnished with sharp projecting ribs, breaks and cuts the apples just sufficiently to allow the pieces to be drawn in between the two bottom or under rollers. These are cast with alternate grooves and ribs, run at the same speed, interlocking with each other, by which means the fruit is mashed thoroughly, breaking all the cells, and rendering the subsequent labor of pressing much lighter. In fact, if the pomace is allowed to drain a while, a very large proportion of the cider will run off without any pressing, which should be saved separately, as it is the most delicious part of the product.

The rollers are adjustable, so that they can be set to mash grapes, without crushing a seed. The hopper can be removed at pleasure, for the purpose of cleaning, by merely turning a button. It is claimed that they make one-fourth more cider from a given quantity of apples, with an expenditure of only three-fourths of the labor, and that in pressing three hundred bushels of apples, the saving in cider between it and the usual "grating" mills will pay for the mill. As it will grind from 40 to 60 bushels of apples per hour, a very small additional yield of cider is sufficient to do this, and any one can gain the price of the mill in six days' work.

The hopper has been improved in appearance, and at the same time provided with recesses for the gearing, protecting it from the liability of being clogged by apples getting into the teeth. The outline is shown more directly on the cut of the "Young America."

In all cider mills the girth has been the weakest place, frequently giving down by the compression of the wood when the press was worked up to the power necessary to

extract the cider. We have added a cast-iron angle-piece (patented), which gives a broader bearing on which the girth rests, remedying this defect.

Another well known disadvantage of all screw presses is, that the screw has to be turned down every few minutes, as the cheese sinks. On February 7th, 1871, letters patent were issued to James L. Haven & Co. for an "improvement in wine and cider presses," consisting essentially of placing a spring between the screw and the follower, whereby the pressure is made continuous for a few minutes after turning down the screw, keeping a steady stream of juice flowing, whilst the operator is gathering or grinding apples, adding materially to the yield of the mill in a given time.

Attached to the crank of the mill is another device, by which the weight of the operator is made available to furnish power. The natural awaying motion in working a crank throws the weight alternately on the right and left leg, working the treadle on which the operator stands, and the power is conveyed in the crank in a way that will be readily understood by the cut, but the advantages can only be appreciated on trial. The same motion can be attached to any other crank machine, such as a corn sheller or feed cutter, on procuring a suitable crank.

For a smaller wine and cider mill, of the same shape and with the same principle of grinding and mashing apparatus as in the large one, the Young America is presented. For grinding and mashing, it is claimed to be inferior to none.

The gearing is entirely encased, rendering breakage or other accidents almost impossible.

The balance wheel is sufficiently large to make the mill work easily, and is screwed on, so that it can be readily detached in shipping or to store the mill more compactly.

The feed and pressure rollers are so arranged that if a stone or other obstruction accidentally gets in, you can open a small cover, insert your hand and remove it, without the delay of taking the hopper off.

The following is the result of a trial made at the Ohio State Fair at Springfield, in September, 1870, which is the fairest we have ever been able to obtain.

There were fifteen pounds of apples, from the same pile, weighed out to each of four mills, three of which we will not designate by name, but only say that they are considered among the most popular mills manufactured in the West.

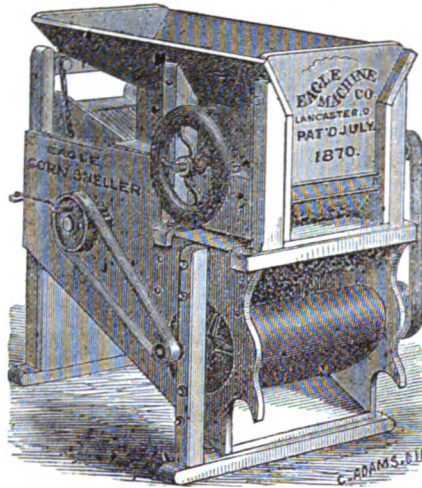
75 revolutions of the crank of No. 1 ground the apples, which produced 6½ pounds cider.

61	"	"	No. 2	"	"	7½	"
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60	"	"	No. 3	"	"	7	"
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30	"	"	American	"	"	9½	"
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Showing that this mill can extract from the same fruit 46 per cent. more cider than mill No. 1; 29 per cent. more than No. 2, and 35 per cent. more than No. 3—an average of 37 per cent. more cider, with less than half the labor in grinding.

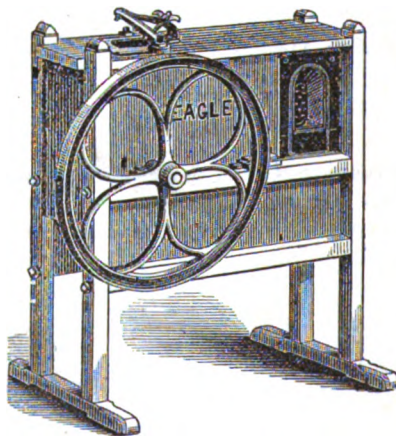


EAGLE POWER CORN SHELLER SEPARATOR, WITH FAN.

Its construction differs from other machines in the following particulars. The frame is of wood, jointed with iron bolts; the shelling cylinder is of iron, formed in sections, shelling teeth adjusted as in a threshing machine; the journals are of heavy iron, and run in anti-friction metal boxes; the power required is nominal, and its capacity is from 800 to 1500 bushels of corn each ten hours.

The cleaning qualities of the Eagle Sheller have never been surpassed. The corn, while falling on and passing through the riddle, is subjected to a strong blast from a fan which entirely cleans it of chaff, pieces of cob, dirt, etc., leaving it fit for market.

There are two sizes made.



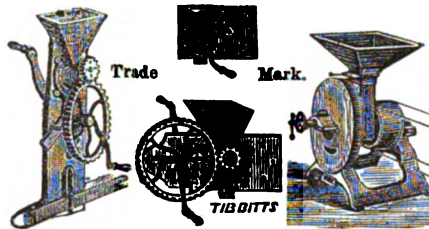
THE EAGLE HAND CORN SHELLER.

The Eagle Corn Sheller and Separator is manufactured only by the Eagle Machine Co., Lancaster, Ohio.

The Eagle is a perfect sheller, and has the following points of excellence :

1. It is durable, having its frame jointed with iron bolts.
2. It is a perfect separator.
3. It has wrought iron shafts.
4. The bearings are turned and fitted to the shafts.
5. It will shell all kinds of corn.
6. It has a heavy balance wheel.
7. It is sold at a moderate price.

J. SEDGEBEER'S



PATENT VICTOR NONPAREIL REVERSIBLE MOTION, SELF-SHARPENING, IRON-CRUSHING AND GRINDING MILLS.

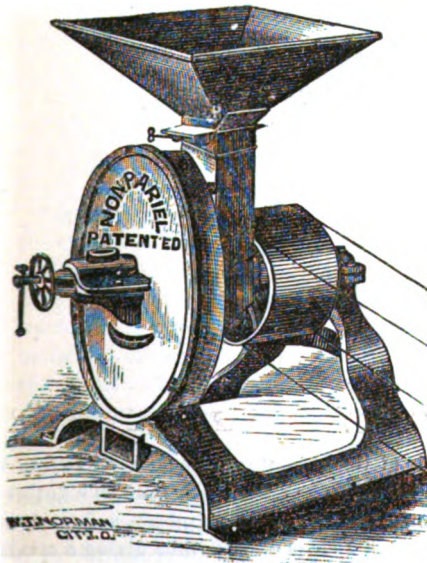


FIG. 1.

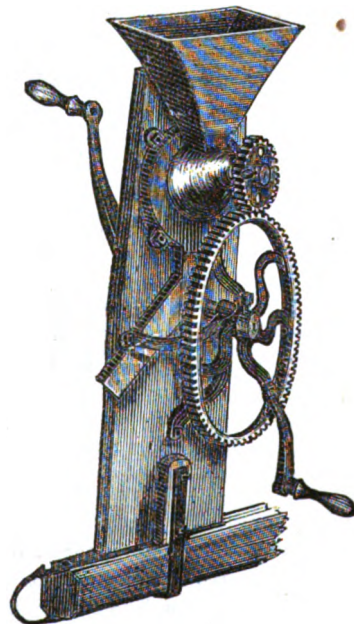


FIG. 4. EMIGRANT MILL.

These mills crush and grind corn in the ear, with or without the shuck, prepared bones, drugs, all kinds of spices, nut-galls, corn-meal, feed of all kinds, and all articles not gummy, that an iron mill can grind.

They run equally well either way, (See Figure 1 for style of power mills, Figs. 3 and 4 for general hand mills, and Fig. 9 for dress or grinding plates.)

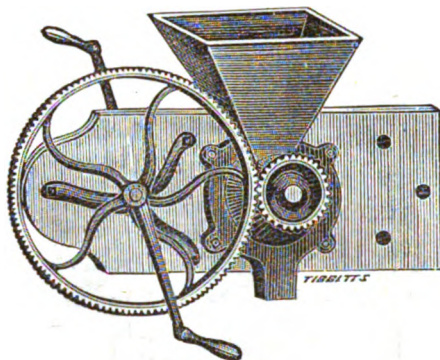


FIG. 3. COTTAGE MILL.

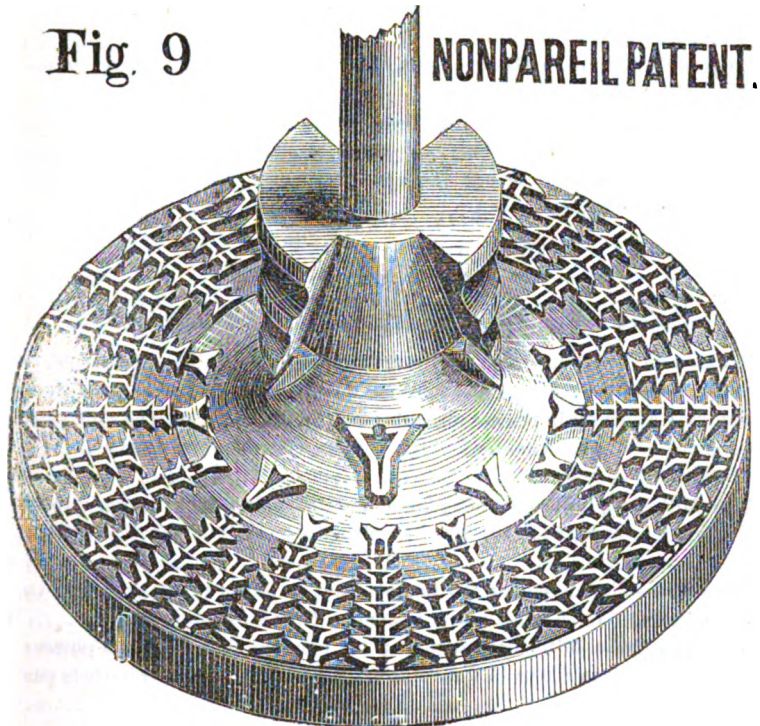
Fig. 1 represents the Victor Nonpareil Mill of five sizes. The bodies, frames and style of the Nonpareil Mill of the five sizes, Nos. 0, A, 1, 2 and 3, are the same throughout. The Nonpareil plate in Figure 9 shows the perfect Nonpareil dress, with the crusher and shaft as used in the large mills when at work, as photographed.



FIG. 5.

The Nonpareil Mill grinding plates are made of the hardest cast-iron, and formed of a series of Y shaped figures, raised from the plain surface of the plate, from an eighth to three sixteenths of an inch, in radial rows, from the apex to the periphery, and in alternate circles, with a depression in the neck of each Y shaped tooth, thus giving a crushing, as well as a forcing character of the shape of the teeth. As the grain passes over the neck of one Y the grain is pulverized, the next tooth or inclined arm of the Y carries

the partially ground matter forward and outward over the next double cutting tooth, and thus continues onward to the periphery, and is discharged and fully pulverized in accordance with the closeness of the plates, which is governed by the temper set-screw. For a more perfect illustration of the Nonpareil dress, see Fig. 9, showing the ear corn crusher, on the shaft also.



RUNNING PLATE WITH THE COB CRUSHER.

Fig. 9 shows a photographic cut of the perfect Nonpareil Dress, (with Cob Crusher) of the Grinding Plates—varying only in the size of the mill.

The crusher runs in a strong cast-iron box, or square tube; the inclination of the jaws of the crusher—which being twice the width in front over the rear, serves also as conductor to convey with great force all substances of grain into the plates—which, being cast in connection with the running plate, gives enormous strength and power to the crusher. The cutting or crushing jaws being over an inch in depth, operate with an absolute certainty in grabbing and crushing corn in the ear, and with the shuck on it, if required, or any other large substance, not gummy, within the strength of the iron to crush—such as root, rhubarb, ginger, cassia, yam root, gall nuts, prepared bones, and a large variety of drugs.

The grinding teeth of each plate are alike, raised up from the surface of the plate from one-eighth to three-sixteenths of an inch; which said teeth must be all completely worn off before new plates are required, and which plates are easily put in. This feature gives durability to the grinding plates.

Every family requires a good coffee mill, also a spice mill.

Never feed grain whole, when you can get a mill like the Nonpareil to grind it.

Never grind coffee in a spice mill; it spoils the fine flavor of the coffee, and takes labor and time to clean the mill. Have a mill for each use.

Every farmer, large or small, wants fresh meal, grits or Graham flour. Then get a Cottage No. 4 Nonpareil Mill.

Every emigrant to all new countries should secure and take with him one or more No. 4 Emigrant Nonpareil Mills.

Every dyspeptic requiring Graham flour, cracked wheat, or other fresh ground meal, should have a No. 4 Nonpareil Mill.

Every colored freedman, south or elsewhere, should be independent in his own cottage and have his own mill to obtain daily, as wanted, fresh, sweet corn meal or hominy.

Two children of ten years of age can grind corn meal with a No. 4 Nonpareil Mill. (See cuts and send for certificates.)

PRICE LIST.

Recapitulation of Weight, Capacity and Power of the Different Sizes.

	Price.
No. 0, B, extra feed mill, having a very large shute of about nine inches wide, is especially adapted for crushing and grinding oil-cake, the full size it comes from the oil press; also corn in the ear and other large substances, such as root, rhubarb, charcoal and other coal for facings, and is an excellent mill for distillers' use; weight, 950 pounds	\$200 00
No. 0, Bone Mill—weight, 900 pounds; 20-inch plate; pulley 8x14; power 8 to 10 horse, steam or water; runs 600 to 800 revolutions per minute; 3 to 5 tons per day	175 00
No. A, Bone Mill—16-inch plate; 400 pounds; pulley 6x10; revolutions 800 to 1200 per minute; 6 to 10 horse power; capacity from 2 to 4 tons per day.....	100 00
No. 1, Nonpareil Grain Mill—16-inch plate; 350 pounds; 6 to 10 horse power; pulley 6x10; runs from 800 to 1600 revolutions per minute; 10 to 30 bushels per hour	75 00
Same mill with extended shaft and fly wheel of 75 pounds.....	84 00
No. 2—240 pounds; 13-inch plates; pulley 5x10; 3 to 5 horse power of any kind; runs from 800 to 1600 revolutions per minute; 16 to 18 bushels per hour.....	55 00
Same mill, with extended shaft and fly-wheel.....	65 00
No. 3—150 pounds, with fly-wheel; pulley 4x6; 9-inch plates, with fly-wheel.....	45 00
No. 4—three styles—farm style, with crank and pulley, with iron stand, weighing 100 pounds; capacity 4 to 10 pecks per hour, according to power	25 00
No. 4—Emigrant Style or Army Mill—weight 40 pounds; 2 cranks and geared, a very superior mill for settlers in any new country	12 50
No. 4—Cottage Style—two cranks and geared; weight 35 pounds.....	12 50
The Emigrant or Cottage Mills, fitted with fly-wheels, each	14 00
No. 5—two styles, fitted with or without gearing—Corn mill, iron frame; 2 cranks and geared; 4 pecks per hour.....	14 00
No. 5—Single crank; wood back; large size; coffee mill for hotels.....	5 00
No. 6—The Universal Spice and Coffee Mill, improved.....	1 25
New ring plates for No. 0 Mill, \$10.00 per pair, fitted and ground.	
“ “ No. 1 “ 8.00 “ “ “ Solid plates..	12 00
“ “ No. 2 “ 6.00 “ “ “ “ ..	10 00

New ring plates for No. 3 Mill, \$4.00 per pair, fitted and ground.	Solid plates..	\$3 00
" " No. 4 " 1.50 " " " " "	" ..	2 00
" " No. 5 " 1.25 " " " " "	" ..	2 50

These mills run equally well either way, are self-sharpening and very durable.

DIRECTIONS.

Hand mills require no particular instructions. Just fasten them up to suit, and turn right or left as may be convenient, regulating the fineness by the set-screw and jam-nut, oiling journals occasionally.

For power mills, 1st. Set the mill upon a box or bench, to suit the belt; oil the journals, eccentric shaker, and leathers at each end of the spindle; run it either way, from 600 to 1200 or 1600 revolutions per minute. The motion does the work.

2d. To grind corn in the ear, with or without shuck, remove the hopper and place in the cob tube, with the slaught on that side crusher descends. The size No. 3 power mills having been remodeled in the feeding process, requires no feed regulator or shaker. The grain may fill the shute and mill all the time. Like hand mills, corn in the ear may be fed in through the hopper, which need not be removed. Keep on the fly-wheel always when grinding, and regulate the fineness by the temper set-screw. If the plates become dull, reverse the motion.

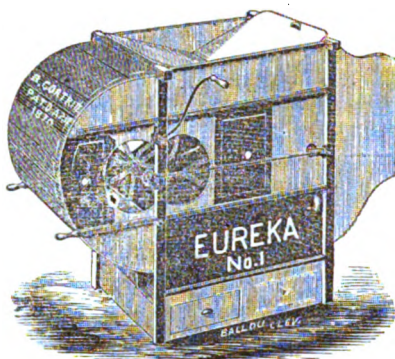
3d. When the mill plates are in perfect tram, never alter the three tram set bolts, until new plates are put in, and even then it may not be necessary.

4th. To put in new plates, first remove the pin which carries the crusher; take off the old runner and put on the new, returning the pin; and with a cold-chisel wedge the running plate *perfectly* true on the spindle; put in the new stationary plate in place of the old one, and set the mill at work; and if it grinds fine enough, all is right; but if not, then tram the stationary plate true with the running plate, as follows:

5th. To tram new plates, the runner being *true* on the spindle and in full motion, with a spring at the tail end to keep the plates apart as far as is permitted with the temper-set screw; then gradually set the temper screw until the plates slightly touch and make some noise; then slacken one of the nut bolts which held the stationary plate; and at the same time screw in the tram bolt near the nut bolt. Now, if less noise is made, the mill is being put in tram; but if more noise is made, return that pair of bolts to their first position and try another pair; and so continue each pair of bolts until no alteration will cause the plates to rub *less*. Remember to always screw in the temper-set screw as fast as the relief given to the plates by any alteration of them will permit.

6th. Before commencing to grind, see that the nuts to the three-head or cover bolts are screwed up tight, and the journal boxes properly screwed down, but not too tight.

N. B.—Should the teeth of the plates become filled up with dough, or gummed up by unmiller-like trying to grind wet grain into fine meal or flour, they can be instantly cleaned by putting through the mill when in motion a few cobs, corn, or even sawdust.



EUREKA FANNING MILL, No. 1.

Manufactured by B. Cortrite, Norwalk, Ohio.

This mill is admitted, by good mechanics and practical men, that its mechanical construction is more complete than any fanning mill now offered to the public. Its simplicity, durability and speed of cleaning has won for it many friends by actual tests on their own farms. Below is a descriptive list of the mill, and some of the kinds of work it will perform :

1st. The mill is secured all around with a frame made of hard wood and girted, or braced on both sides.

2d. The mill is made of well seasoned material, and mechanically put together, and well painted.

3d. The gear is on the inside, which is a protection from breakage, and by which children may sometimes save a finger.

4th. The journals and boxes are all fitted up by a lathe, so that each part is a perfect fit, causing the mill to run light and still.

5th. The hopper is so constructed that it does not add to the height of the mill above the posts, thereby saving six inches in the height of lifting the grain into the hopper.

6th. The hopper is so arranged that both sides are of an equal angle, thereby allowing the grain to flow towards the throat of the hopper evenly, one side of the hopper being adjustable to any desired point.

7th. The hopper and sieves are so constructed that the grain falls from the throat of the hopper on sieve No. 6 the full width of the sieve, allowing the grain to spread evenly all over the upper end of the sieve at once.

8th. The shoe is hung underneath the hopper by six straps of refined iron, and is a side body shake, allowing both ends of the sieves and shoe to move back and forth alike.

9th. The shoe has an agitator, which consists of a series of iron fingers, projecting upward from the shoe into the throat of the hopper, which prevents the grain from clogging in the hopper.

10th. It has sieves so constructed that wheat is screened before it comes in contact with the wind, thereby taking out all such seeds as dock, sorrel, mustard, timothy, clover and red top ; in fact all small seeds are taken out and conducted through tin conductors underneath the mill, instead of being blown out in the tailings, and then thrown out in the manure to grow again.

11th. The mill has ten sieves, and wind guides to govern the blast at any required force.

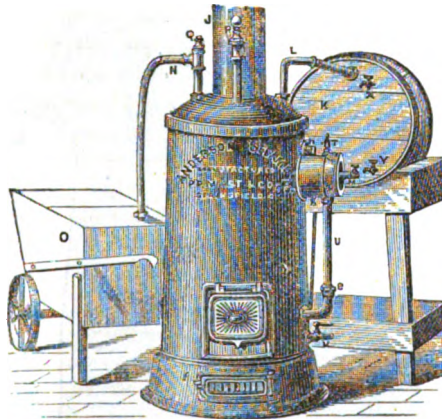
12th. The sieves and gains in the shoe, when the sieves go, are numbered in plain figures from 1 to 10, and a card of printed directions for using accompanies each mill.

13th. The mill has six fans, and will produce a more even and heavier blast than a mill can with but four fans.

14th. It separates oats from spring wheat; it will also separate, at once through the mill, all of the cockle and chess from seed wheat, and at the same time grade the wheat into two grades, number one and two.

15th. It chaffs and screens all kinds of grain and grass seeds that are grown; and for flax seed there is a special arrangement both for chaffing and screening out foul seeds, such as "pull-down" and "summer grass."

16th. The above cut represents a side and top view of the mill, together with the trade mark, which is "Eureka No. 1," with the name of the patentee on each mill.



"ANDERSON" AGRICULTURAL STEAMER.

Manufactured by P. P. Mast & Co., Springfield, Ohio.

For steaming feed for stock; heating cheese vats; tannery vats; conservatories, etc.

Heretofore the appliances for steaming feed have generally been of a temporary character (except where feeding has been done on so large a scale as to warrant the outlay for expensive stationary boilers); usually it has been done with kettles or cauldrons, with closely fitting covers, that have to be removed to refill with water, and to which there are many other objections.

It will at once be seen that to come into general use a boiler should be made that is perfectly safe, portable, low pressure, with reliable water feeder, and have no intricate parts, such as cannot be comprehended by the most inexperienced.

It is claimed that the Anderson Steamer has all these requirements. It is made of wrought iron, as thoroughly riveted and finished as the best high pressure steam engine boilers, has a reliable automatic or self-acting water feeding apparatus, safety valves vacuum valves, steam and water gauge cocks complete, making it secure against explosion.

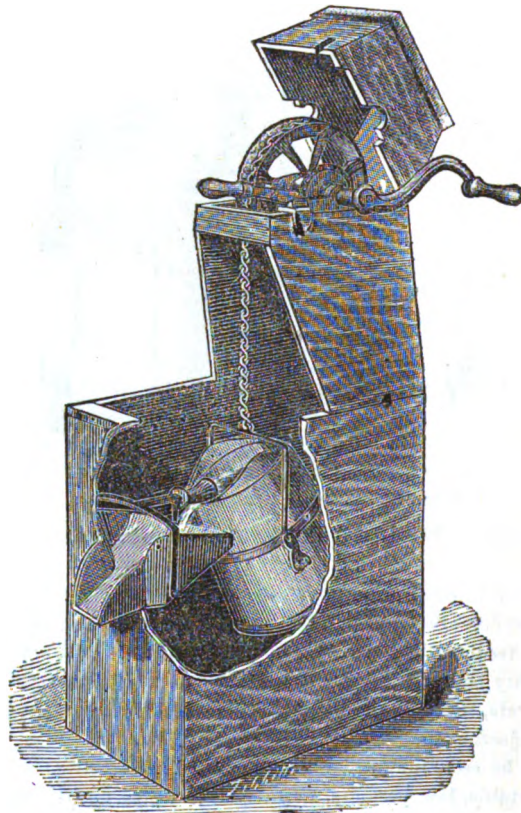
It is peculiar in construction, being in fact one complete double boiler within another, the two communicating one with the other. The fire space is inside of this, thus giving an extraordinary amount of fire surface in proportion to the size.

No. 1 has 1,893 square inches heating surface; No. 2 has 3,806 square inches heating surface; No. 3 has 4,902 square inches heating surface; No. 4 has 6,188 square inches heating surface.

No. 1 will cook feed for from 50 to 100 head of hogs; No. 2 from 200 to 300 head; No. 3 from 300 to 400 head; No. 4 from 500 to 600 head.

It is set on a cast iron base, making it as secure from fire as an ordinary stove; weighs from 300 to 500 lbs., and is, therefore, portable, and can be used in the open air or in any building where there is a flue sufficiently large to receive the smoke pipe.

Having so large a fire surface it requires but little fuel, and all the attention necessary is that the water tank is kept supplied and fire kept up. The most inexperienced man or boy can soon learn to use it with perfect safety.



WHEELER'S "TORRENT" WATER DRAWER.

Manufactured by Van Cleef, Browne & Co., Cleveland Ohio.

The latest improvement for elevating water, with a self-emptying bucket attached. This Water Drawer has an open corrugated reel for the chain, and is used with any kind

of round chain or rope. The groove being open at the bottom, directly under the chain, effectually prevents it from filling with ice in winter.

A brake, in combination with the ratchet, is applied to the ratchet wheel, which obviates the necessity of turning or holding the crank in letting the bucket down. When the brake is applied the ratchet is raised, and the instant the hand is removed from the brake, the ratchet falls into place, so there can be no accident from letting go the crank in drawing up the bucket.

The bucket is operated by a balance weight on the opposite end of the chain, which makes it easy to draw up and discharge the water. The water is received in the centre of the bottom of the bucket through a "stem valve," instead of a "hinge valve," which permits the bucket to sink straight down into the water, so that it can be drawn up perpendicularly with much greater rapidity than when it comes with the peculiar swinging motion a hinge valve always gives it. The water is discharged from the top of the bucket in the shortest possible instant of time, by tipping it over into the spout.

AGRICULTURAL MACHINES—SECOND DIVISION.

Aultman & Taylor, Mansfield, best horse power (sweep).....	\$20
Rice & Co., Springfield, best horse power (chain).....	20
Rinehart, Ballard & Co., Springfield, best horse power.....	10
Wm. McClelland, Wellington, best log cross cut and drag saw mill (horse power)..	15
J. B. Jones, Xenia, best log cross cut and drag saw mill (hand power).....	5
H. A. Ashley, Springfield, best mole or blind ditching machine.....	10
H. Brewer & Son, Tecumseh, Mich., best drain tile machine, with specimens of tile.	50
S. T. Lantz, Urbana, best self-regulating wind mill.....	10

REPORT OF COMMITTEE.

HORSE POWER SWEEP.—Your committee think there is injustice in requiring a two-horse and a ten-horse power to compete. We think two premiums ought to be offered.

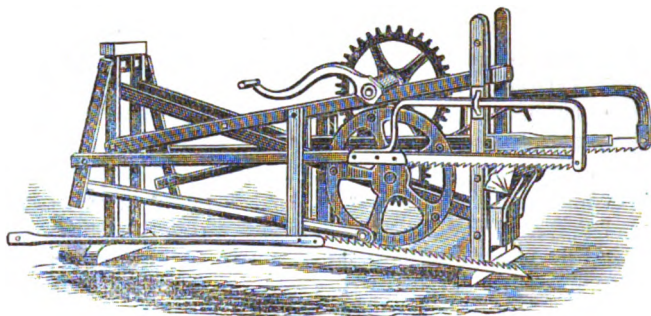
STUMP EXTRACTORS.—Tried and found wanting. We have tried Nos. 7 and 14, and both prove too weak. Upon further reflection your committee desire to state further in regard to these stump extractors, that, as said above, we think there was not strength in either of the machines to be of any practical value to the community to buy.

BRICK MACHINE.—Your committee feel incompetent to decide from the test had of its real practical value as a brick machine. The same machine is offered as a tile machine, and is of the first quality.

MOLE OR BLIND DITCHING MACHINE.—In this class we think that your society would do a great justice to offer a premium on open ditch machine.

DRAIN TILE MACHINE.—Your committee think you ought to offer a premium for steam or high pressure machine, and one for a horse power or slow motive power.

A. A. JEWELL,
FRANK A. GREEN,
THOS. B. WHILEY.



CROSS-CUT OR DRAG SAW.

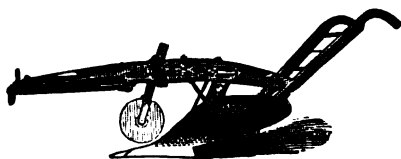
Manufactured by Leaman & Jones, Xenia, Ohio.

The cross-cut or drag saw, shown in the cut, is propelled with double crank, and driven with ease by two men, passing the saw over eight feet of surface per revolution, giving it the capacity of performing four or six men's labor with the old cross-cut saw.

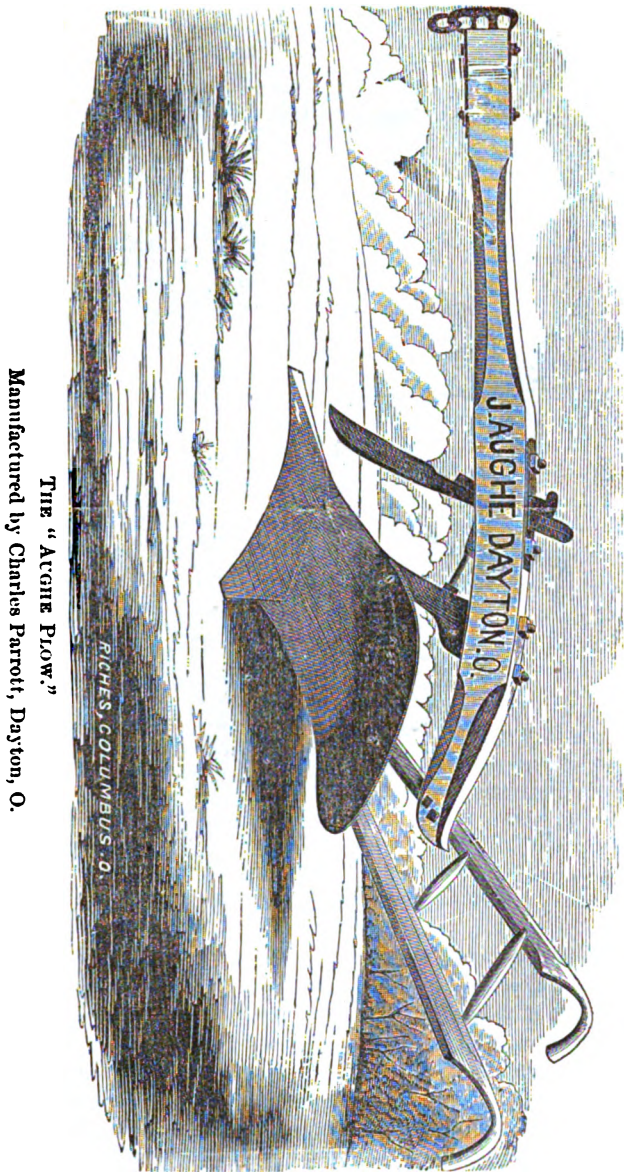
The machine, all fitted out, weighs about 175 pounds, is easily moved along the log, and as readily applied as the cross-cut saw.

PLOWs.

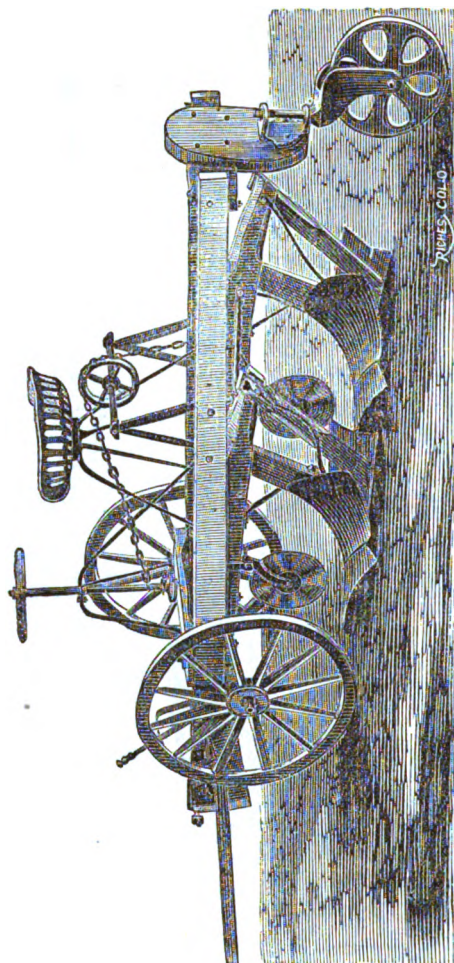
F. T. Woodford, Cleveland, best hill-side plow.....	\$10
Chas. Parrott, Dayton, best one-horse plow.....	10
Wm. A. Nixon, Alliance, best double shovel plow.....	10
Deere & Co., Moline, Ill., best general purpose plow.....	20
Moline Plow Co., Moline, Ill., best stubble plow.....	10
John Heiser, Sidney, best sod plow.....	10
John Blackwood, Lithopolis, best double plow.....	10
A. Franklin, Springfield, best sub-soil plow.....	10
Chas. Parrott, Dayton, best display and greatest variety of plows.....	20
Whiteley & Winters, Springfield, best improvement in plows.....	Dip.



HEISER'S SOD PLOW, Sidney, Ohio.



The "Anghe Plow" is manufactured at Dayton, Ohio, by Chas. Parrott, in variety composed of sod, general purpose, corn and other plows. The excellence of the material used in, and the careful and workmanlike manner of their construction, makes them as durable as any plow in the market, and their shape and style is best adapted for ease and thoroughness of work, and for scouring in sticky soils, peculiarly adapted to bottom lands.



GANG PLOW.

John Blackwood, of Lithopolis, Ohio, had on exhibition his new device in the way of "gang plows." It is a labor-saving implement, runs with very little aid, at least so nearly independent is it that a boy, old man, or cripple can manage it. A chain regulates the depth of furrow, and prevents the formation of a hard pan, as the lifting force is supported and kept off the bottom of furrow by the wheels and chain, thus lessening friction and lightening the draft. By means of a lever the plows can be kept level at any depth of furrow. It can be turned without moving the front wheels from their places.

The implement above described was patented August 15, 1871, and as deep tillage and a loose subsoil is an object to be desired, the object the patentee had in view was not altogether a labor-saving implement, but also an implement that would do better work than the ordinary plow, and yet it is so constructed that plows in common use in a neighborhood can be attached to it, as variety of soil requires different styles of plows.

PLOWING MATCH.

C. R. Miller, Springfield, best plowman.....	\$25
Charley Wood, Springfield, best plowboy.....	20

THIRD DEPARTMENT.

MECHANICS' AND MANUFACTURERS' PRODUCTS.

WORKED METALS.

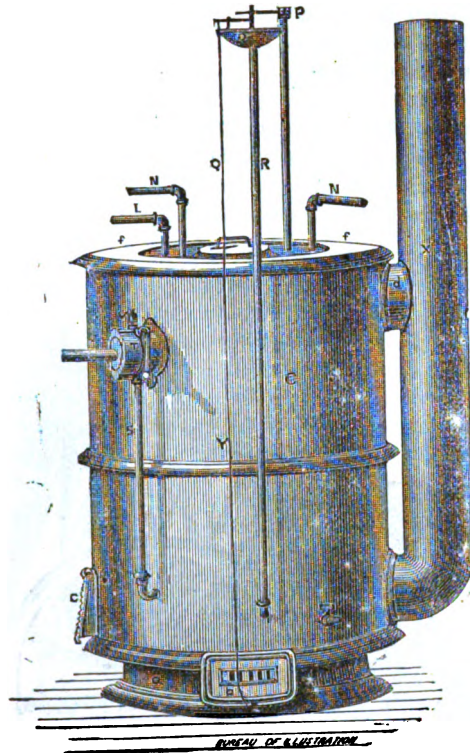
Rice & Co. Springfield, best display of copper work.....	\$20
Dayton Gauge Co., Dayton, best display of brass work	20
Rice & Co., Springfield, best display of axes.....	5
Dunlap & Barnett, Springfield, best display of locks.....	10
" " best display of door trimmings.....	5
" " best display of window trimmings.....	5
" " best display of window blind or shutter trimmings.	5
Irvine & Huston, Springfield, best display of hames.....	5
" " best display of saddletrees.....	5
Best display of saddlers' hardware	No award.
Dunlap & Barnett, Springfield, best display of horse shoes.....	3
Rice & Co., Springfield, best display of horse shoe nails.....	2
Best display of plumber's goods and ware	No award.
Best display of gas chandeliers and gas burners.....	No award.
Rice & Co., Springfield, best display of lamps.....	5
Dunlap & Barnett, Springfield, best display of general hardware	15
" " best display of iron and steel.....	15
Best display of reaping and mowing machine knives	No award.
Dunlap & Barnett, Springfield, best display of sash fasteners.....	3
Best display of cooper's tools.....	No award.
Best display of truss hoops.....	No award.
Dunlap & Barnett, Springfield, best display of mechanic's tools, other than cooper's.	20
" " best display of table cutlery.....	10
" " best display of pocket cutlery.....	10
Best display of silver ware.....	No award.
Rice & Co., Springfield, best display of Britannia ware.....	5
" " best display of Japan ware.....	5
Best display of clocks.....	No award.
Best tower clock.....	No award.
Best hotel annunciator.....	No award.
Best display of safes.....	No award.
Best eave trough fastener	No award.
T. Morgan & Co., Mechanicsburg, best display of kitchen utensils of brass or copper	15
Rice & Co., Springfield, best display of kitchen utensils of tin.....	10
Best display of galvanized iron moulding	No award.
Dunlap & Barnett, Springfield, best display of circular saws	10
" " best display of mill saws.....	10
" " best display of hand saws.....	5
" " best display of files.....	5
Rice & Co., Springfield, best display of brushes.....	5
Best display of shoe lasts, pegs and lasting machine.....	No award.

STOVES, CASTINGS, MARBLEIZING, ETC.

Wm. Resor & Co., Cincinnati, best cooking stove for wood.....	\$20
Perry & Co., Rice & Co., agents, Springfield, best cooking stove for coal.....	20
Perry & Co., Rice & Co., agents, Springfield, best cooking stove for coal or wood....	20
Wm. Resor & Co., Cincinnati, best parlor stove.....	20
P. P. Mast & Co., Springfield, best warming furnace or other apparatus.....	20
Rice & Co., Springfield, best base burner.....	20
“ “ cooking range.....	10
“ “ parlor grate.....	5
Columbus Mantle and Grate Co., best specimen of marbleized iron.....	20
“ “ “ stone.....	10
Rice & Co., Springfield, best display of hollow iron ware.....	5



With or without extension top, as in cut, or with Bussey's patent low reservoir, claimed to be unequalled for comfort, economy, neatness, and durability; also manufacturers of Sunlight, as the best heating stove for coal.



"ANDERSON" LOW PRESSURE STEAM HEATING APPARATUS.

P. P. Mast & Co., of Springfield, are manufacturing Anderson's Low-Pressure Steam Heating Apparatus, for heating private dwellings, stores, halls, churches, conservatories, etc.

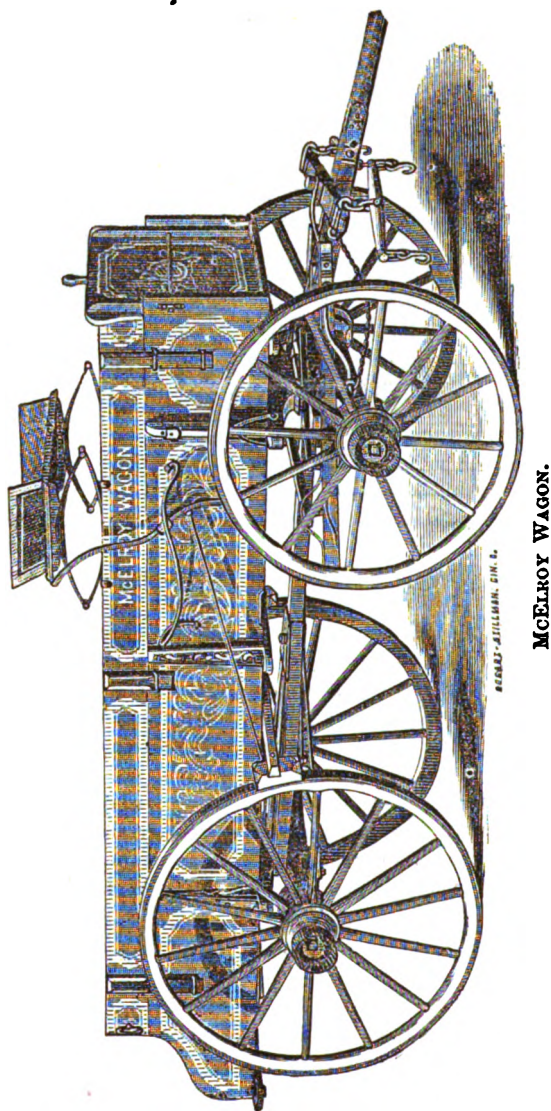
The boiler is constructed upon the same principles as the Farm Steamer, but is arranged as a base burner, where coal is used, and so constructed that all the smoke and gasses are consumed. It is safe from explosion, and free from dust, gas or noise. The supply of water and draft is automatic or self-regulating. There is a constant supply of fresh air passing through the radiators, being nicely warmed, but not burned, thus avoiding injury to the health of the occupants, or to the wood-work or furniture in the house.

It is easily adjusted to any required temperature, giving an even distribution of heat. It is simple in its construction—durable, quick in its operations, economical in fuel, and requires very little attention more than to supply it with coal morning and evening.

VEHICLES.

David West, Springfield, best two-horse family carriage.....	\$40
Thomas Anderson, Columbus, 2d best.....	20
" " best one-horse family carriage.....	25
Miller Bros., Bellefontaine, best top buggy.....	25
" " open buggy.....	20

J. McElroy, Delaware, best farm wagon.....	\$20
E. Bumgardner, Bellebrook, best spring market wagon.....	15
John H. Warder, Springfield, best cart.....	10
“ “ street goods wagon.....	15
Studebaker Bros., Manufacturing Co., South Bend, Ind., best wagon or carriage brake	5
Rice & Co., Springfield, best carriage or cab for children.....	5
L. D. Cooke, Tippecanoe, best display carriage wheels, hubs, etc.....	25
Santley & Brown, Wellington, best bent work for carriages.....	15



McELROY WAGON.

MCELROY WAGON.

This wagon is manufactured by J. McElroy & Son at Delaware, Ohio. Their location gives them facilities for securing for their business as good timber as grows in the State. Their motto is: A good article and a fair price is cheaper to the purchaser than an inferior one at a low price.

They claim for their wagons symmetrical proportion in every part, which adds greatly to their durability and strength. They make wagons only, and concentrate all efforts to that class of work; by an experience of over forty years, and careful attention to the wants of farmers and teamsters, by a thorough system of skillful labor, improved machinery, good material, a system which effectually excludes all shams, and offers a constant premium for honest work, they can offer to the farmer a wagon of great durability and easy draft. When required, they give the following warranties with each wagon:

"We warrant the thimble skein wagon of our manufacture to be of good seasoned lumber and well made; any breakage, within one year, resulting from defect, either in material or workmanship, we agree to make good without cost to the purchaser."

HOUSEHOLD IMPLEMENTS, WOODEN WARE, FIXTURES, ETC.

Rice & Co., Springfield, best cedar ware.....	\$5
" " pine ware.....	5
Best oak ware.....	No award.
B. C. Converse, Springfield, best window shades.....	5
Vorhees, Hayward & Co., Springfield, best window blinds.....	5
Rice & Co., Springfield, best willow ware.....	5
Vorhees, Hayward & Co., best display of pine, oak or walnut doors.....	10
John Bos, Clifton, best display of flour, pork, or tight barrels.....	5
Best display of coopers' ware.....	No award.
Walker, Stetts & Co., Cincinnati, best grain measures.....	5
Rice & Co., Springfield, best butter firkins.....	5
Vorhees, Hayward & Co., Springfield, best worked flooring.....	5
A. J. Fitch, Thompson, best turning lathe work.....	5
Best osier willow.....	No award.
Abram Decker, Millersport, best home made axe handles.....	3
Vanduzen & Tift, Cincinnati, best church bell.....	5
Rice & Co., Springfield, best farm bell.....	3
Best chime bells.....	No award.
Rice & Co., Springfield, best post hole borer or digger.....	5
Rice & Co., Springfield, best ornamental fence.....	10
Asa Mattice, Cleveland, iron fence, including posts.....	10
J. S. Benedicks, Bedford, best farm gate.....	5
Rice & Co., Springfield, best fruit and step ladder.....	5
Rice & Co., Springfield, best extension ladder.....	5
Best sheep rack.....	No award.
Best sheep chair.....	No award.
Rice & Co., Springfield, best dry house.....	10

Lang & Colver, Washington, best cheese press.....	\$5
“ “ “ vat with heater attached.....	10
Rice & Co., Springfield, best dog power.....	5
Chas. Arthur, Tremont, best dozen corn brooms.....	5
Chas. Blust, Mansfield, best churn.....	5
Rice & Co., Springfield, best butter worker.....	5
Best cabbage cutter.....	No award.
Dunlap & Barnett, Springfield, best sausage cutter and stuffer.....	5
E. R. Chamberlain, Bellefontaine, best washing machine.....	10
H. Campbell, West Alexandria, best clothes wringer.....	5
Best mangle or ironing machine.....	5
Union Manufacturing Co., Toledo, best clothes horse to occupy least space.....	5
Best half dozen washboards.....	No award.
Rice & Co., Springfield, best water filter.....	5
Best hand power loom.....	No award.
2d best.....	No award.
Dunlap & Barnett, Springfield, best grindstone.....	3
Col. John Leffel, Springfield, best bee hive (without bees).....	5
Rober & Co., Dayton, best refrigerator.....	5

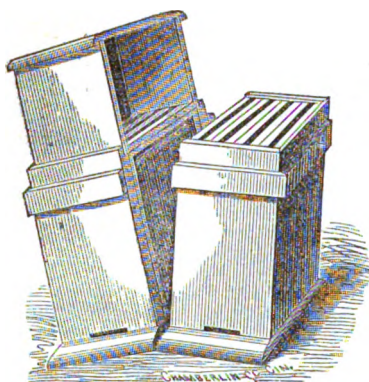


FIG. 1.

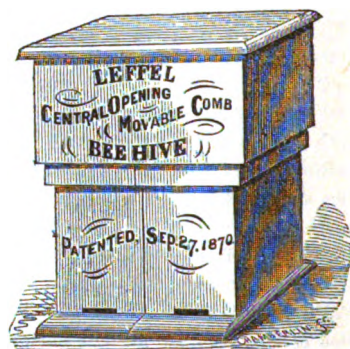


FIG. 4.

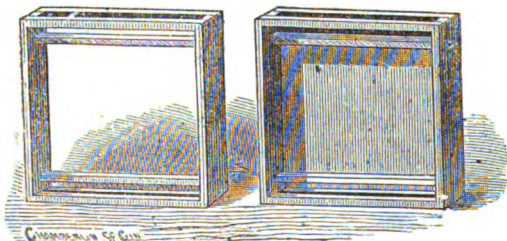


FIG. 2.

FIG. 3.

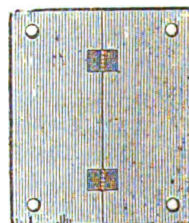


FIG. 5.

THE LEFFEL CENTRAL-OPENING, MOVABLE-COMB BEE HIVE.

Patented September 27, 1870.

DESCRIPTION OF THE LEFFEL BEE HIVE.

Fig. 1 is a view, in perspective, of the hive, partially opened, with portions of the same removed, in order more fully to illustrate the arrangement of the interior.

Fig. 2 is a side view of one of the comb-frames.

Fig. 3 represents a comb-frame, boarded upon one of its sides, which is termed a condenser.

Fig. 4 is a front view of the hive, complete and closed.

Fig. 5 represents the bottom board, showing the manner in which the parts are hinged together.

The cap is of the ordinary form, and can be fitted with facility over the top of the breeding chamber.

The body, or main portion of the hive, is divided, by a vertical plane, into two parts, which are hinged together at the bottoms in such a manner that each may be freely removed from the other, or made to stand ajar, at any angle within the arc of one hundred and eighty degrees.

The lower or breeding chamber is fitted upon the bottom board, and provided with two entrances; and near the top of the breeding chamber are cleats, upon which rests the cap of the hive.

The sides of the comb-frames are rectangular in form, and may be packed closely together, with their edges touching each other.

The cross-bars are also rectangular and parallel to each other, having between them longitudinal spaces. The comb-guides are arranged at a distance from said spaces equal to about the width of the same.

The cross-bars are flush with the top of the breeding chamber, there being no space between them and the bottoms of the corresponding strips, or slats, which form the bottom of the honey box.

The condenser is of the same construction as the comb-frames, except that one side is boarded over, in order that the dimensity of the hive may be limited, by a lateral movement of the condenser. The side of the condenser may be made of wood, glass, or other suitable material.

When it is desired to handle the comb-frames in the breeding chamber, the honey-box should be taken off; but when it is wished merely to inspect the center, or remove the queen, it is not always necessary to remove the super.

The advantages of this central opening are obvious. Usually, in examining a hive of bees, it is the center, or heart, that the operator has most to do with. The queen is more frequently found on the center combs than anywhere else; we look there for brood, queen-cells, etc.; and also to ascertain the condition of the colony or stock.

The frames are so constructed as to require the bees to pass over the comb-guides to gain access to the honey-box. This arrangement of the guides has a tendency to prevent the bees building crooked combs, by leaving the guides for the bars adjoining, as is too frequently the case in ordinary movable comb hives.

The arrangement of the cross-bars and comb-guides also prevents a direct draft of cold air among the bees and brood during the time of winter upward ventilation; and during the honey harvest this arrangement gives just enough passage way to the supers.

The condenser enables the bee keeper to place his small swarms and nuclei within a proper compass, thus economizing the warmth, so necessary to their existence.

FOURTH DEPARTMENT.

TEXTILE FABRICS—DOMESTIC MANUFACTURES.

AWARDS ON HOUSEHOLD FABRICS—(BEING GOODS MADE IN FAMILY.)

Mrs. A. Church, Painesville, best rag carpet, 15 yards.....	\$10
Mrs. Johnson, W. Beaver, 2d best.....	5
Mrs. Hannah Brake, Fairfield, best hearth rug.....	5
Maria Gard, Springfield, 2d best.....	3
Mrs. J. D. Wood, Springfield, best double carpet coverlet.....	10
“ “ 2d best.....	5
Mrs. P. Kerr, Cedarville, best pair woolen knit stockings.....	3
Mrs. M. E. Smith, Springfield, 2d best.....	2
Mrs. Will Barr, Reynoldsburg, best pair cotton knit socks.....	2
Mrs. W. R. Sprague, Reynoldsburg, 2d best.....	1
“ “ best pair woolen knit socks.....	3
Mrs. P. Kerr, Cedarville, 2d best.....	2
Mrs. W. R. Sprague, Reynoldsburg, best pair linen knit socks.....	2
Mrs. N. C. Roberts, Urbana 2d best.....	1
Mrs. Powell, Osborn, best pair cotton knit stockings.....	2
Mrs. Will Barr, Reynoldsburg, 2d best.....	1
Best pair by Misses under 12 years of age.....	No award.
2d best.....	“
Best pair woolen knit stockings by Misses under 12 years of age.....	“
2d best.....	“
Mrs. John Shreve, Dayton, best knitting.....	2
Miss Eva Angsperger, Tiffin, best worsted knit stockings.....	2
Mrs. A. Church, Painesville, best stocking yarn.....	2
Mrs. M. Purdey, 20 Mile Stand P. O., best woolen shawl.....	5
Mrs. R. Schoenberg, Columbus, best woolen knit shirt.....	3
Mrs. E. Mayhew, Urichsville, best straw hat.....	3
Best palm leaf hat.....	No award.
Best grass hat.....	“
Mrs. W. R. Sprague, Reynoldsburg, best gentleman's shirts.....	5
Mrs. Annie M. Hedges, best knit bed spread.....	5
Best wove bed spread.....	No award.
Mrs. Gabriel Potter, Summerford, best 10 lbs dressed flax.....	5
Mrs. E. Mayhew, Urichsville, best 1 lb. linen sewing thread.....	3

AWARDS ON NEEDLE-WORK, EMBROIDERY, ETC.

Mrs. R. Schoenberg, Columbus, best ottoman cover.....	\$5
Best table cover.....	No award.
Mrs. Wm. A. Barnett, Springfield, best fancy chair work with needle.....	5

Mrs. R. Shoenberg, Columbus, best fancy chair cushion and back	\$5
Miss S. B. Broadwell, Urbana, best crochet shawl	5
Mrs. R. Schoenberg, Columbus, best worked shawl	3
Nancy Reed, Yellow Springs, best crochet tidy	5
Mrs. R. W. Buck, Delaware, best lace cape	5
Mrs. M. Gieseey, Columbus, best lamp stand mat	3
Miss Sarah Van Deman, Delaware, best ornamental needle work	5
Mrs. C. E. Hills, Delaware, best silk embroidery	5
Miss Eva Augsperger, Tiffin, best embroidered sofa cushion	5
Mrs. A. E. Davis, Columbus, best embroidered dress cloak	5
Best embroidered table spread	No award.
“ “ dressing gown	“
Miss Sue H. Baker, Springfield, best embroidered lady's robe	5
Mrs. S. Van Deman, Delaware, best embroidered lady's dress	5
Mrs. E. J. Corry, Xenia, best embroidered children's clothes	5
Mrs. Geo. H. Coles, Springfield, best embroidered infant's cloak	3
Mrs. M. Gieseey, Columbus, best embroidered lady's collar	3
Sue Grimes, Cedarville, best embroidered handkerchief	3
Minnie C. King, Yellow Springs, best chenille embroidery	5
Mrs. R. Schoenberg, Columbus, best embroidery with beads	5
Best embroidery with gold thread	No award.
Mrs. E. A. Davis, Columbus, best head dress	3
Mrs. R. P. Thomas, Springfield, best teting collar	5
Miss Sue Grimes, Cedarville, best worked collar	3
Mrs. R. N. Buck, Delaware, best worked veil	5
Sallie G. Turnbull, Cedarville, best worked handkerchief	3
I. M. Hatcher, Springfield, best silk hat	5
Black & Broadwell, Springfield, best velvet hat	5
Mrs. A. E. Davis, Columbus, best straw hat	3
Mrs. R. Schoenberg, Columbus, best knit cloak	5
Eva Augsperger, Tiffin, best variety of linen embroidery	5
J. M. Hatcher & Co., Springfield, best group of artificial flowers	5
Mrs. A. E. Davis, Columbus, best variety of artificial flowers	5
Mrs. G. M. Burt, Springfield, best specimen of wax flowers	3
Mrs. L. Spees, Columbus, best group of wax flowers	5
Albert Sellers, Washington C. H., best specimen of wax fruit	3
Mrs. L. Spees, best and largest variety of wax fruit	5
Mrs. L. Spees, Columbus, best specimen moss or lichen work	5
Ella Sparks, Springfield, best specimen cone work	5
Mrs. Geo. Spence, Springfield, best specimen leaf work	5
Mrs. L. Spees, Columbus, best specimen flower work	5
Mrs. Mary Stoner, Springfield, best specimen of shell work	5
Mrs. E. Mayhew, Urichsville, best braid of straw or grass	5
Mrs. M. Gieseey, Columbus, best specimen of braid work	3
Helen E. Lewis, Springfield, best silk embroidered picture	5
Etta Huntington, Xenia, best worsted embroidered picture	5
J. C. White, Springfield, best piano cover	5
Mattie McMillan, Cedarville, best white quilt	5
Mary Frey, Springfield, best worked quilt	5

Mrs. S. H. Thompson, Springfield, best silk quilt.....	\$5
E. Mitchell, Springfield, best patch-work quilt.....	5
J. M. Thirkied, South Charleston, best children's afghan.....	5
Mrs. J. A Weatherby, Springfield, best hair wreath.....	5
Martha Warner, Selma, best fancy hair work.....	5
Mrs. A. E. Davis, Columbus, best display of hair work.....	5
Geo. H. Cules, Springfield, best fancy knit articles.....	5

AWARDS ON CABINET WARE.

Foos & Mulliken, Springfield, best dressing bureau.....	\$20
Foos & Mulliken, Springfield, best sofa.....	20
“ “ “ “ lounge.....	10
“ “ “ “ ext. table.....	10
Delaware Chair Co., Delaware, best office chair.....	10
Foos & Mulliken, Springfield, best set parlor chairs.....	10
Foos & Mulliken, Springfield, best centre table.....	10
Best pair side tables.....	No award.
Foos & Mulliken, Springfield, best set parlor furniture.....	20
Foos & Mulliken, Springfield, best set chamber furniture.....	20
Foos & Mulliken, Springfield, best display of furniture.....	25
Best display of mattresses.....	No award.
Voorhees, Hayward & Co., Springfield, best seats and desks for schools.....	10
Foos & Mulliken, Springfield, best writing desks.....	10
Best book case.....	No award.
Best wardrobe.....	No award.
John Todd, Springfield, best sick chair or couch.....	10
Delaware Chair Co., Delaware, best display of chairs.....	20

AWARDS ON FACTORY GOODS—MANUFACTURED BY EXHIBITER.

Urbana Woolen Mills, Urbana, best 3 pieces fancy cassimere, all wool.....	\$20
E. Stewart & Co., Mechanicsburg, 2d best.....	15
Urbana Woolen Mills, Urbana, best 3 pieces plain cassinere, all wool.....	15
Thos. Piper & Co., West Liberty, 2d best.....	10
Urbana Woolen Mills, Urbana, best 5 pieces assorted tweeds, all wool.....	10
Tiffin Woolen Mills, Tiffin, 2d best.....	5
“ “ “ best 2 pieces boys' check cassimeres, all wool.....	10
Urbana Woolen Mills, Urbana, 2d best.....	5
Thos. Piper & Co., West Liberty, best 5 pieces check or plain flannels, all wool.....	10
Tiffin Woolen Mills, Tiffin, 2d best.....	5
“ “ “ best 1 piece white flannel, all wool.....	5
E. Stewart & Co., Mechanicsburg, 2d best.....	3
Tiffin Woolen Mills, Tiffin, best 1 piece of colored flannel, all wool.....	5
Urbana Woolen Mills, Urbana, 2d best.....	3
Tiffin Woolen Mills, Tiffin, best 1 piece colored twilled flannel, all wool.....	5
Thos. Piper & Co., West Liberty, 2d best.....	3

Tiffin Woolen Mills, Tiffin, best 5 pieces omish flannel, all wool	\$5
2d best	No award.
Rabbitts, Steele & Co., Springfield, best 1 piece domestic or cotton warp flannel	3
Mrs. Susan Sintz, Springfield, 2d best.....	2
Tiffin Woolen Mills, Tiffin, best 1 piece 8-4 sheeting flannel, all wool.....	10
Best 1 piece 8-4 sheeting flannel, cotton warp.....	No award.
Best 2 pieces 6-4 cloakings, all wool.....	No award.
2d best.....	No award.
Tiffin Woolen Mills, Tiffin, best 2 pieces 6-4 honey comb sackings, all wool	5
2d best.....	No award.
Tiffin Woolen Mills, Tiffin, best 5 pieces 3-4 or 6-4 fancy dress plaids.....	10
Piqua Woolen Mills, Piqua 2d best.....	5
Best $\frac{1}{2}$ doz. all wool double shawls.....	No award.
2d best.....	"
Best $\frac{1}{2}$ doz. square shawls	"
2d best	"
Piqua Woolen Mills, Piqua, best half dozen shoulder shawls.....	5
2d best.....	No award.
Piqua Woolen Mills, Piqua, best 5 pairs all wool blankets.....	10
Thos. Piper & Co., West Liberty, 2d best	5
Best 2 pairs cotton warp blankets	No award.
2d best.....	No award.
Tiffin Woolen Mills, Tiffin, best 25 pounds assorted stocking yarn	10
Rabbitts, Steele & Co., Springfield, 2d best	5
Best 10 lbs. balmoral yarn.....	No award.
2d best.....	"
Best 10 lbs. zephyr yarn.....	"
2d best.....	"
Piqua Woolen Mills, Piqua, best 3 pieces of satinnet.....	10
Thos. Piper & Co., West Liberty, 2d best	5
Zanesville Woolen Manufacturing Company, Zanesville, best 10 pieces of jeans	20
Rabbitts, Steele & Co., Springfield, 2d best	10
Piqua Woolen Mills, Piqua, best 2 pieces linsey	10
2d best.....	No award.
Best 2 pairs wool carpeting.....	"
2d best.....	"
Best 5 doz. woolen socks and stockings.....	"
Best display of woolen hbiery	"
Piqua Woolen Mills, Piqua, best display of carriage robes, of wool	10
Best 15 yards tow cloth	No award.
2d best.....	"
Best 10 yards linen.....	"
2d best.....	"
Mrs. E. J. Neer, Urbana, best 10 yards linen diaper	5
2d best.....	No award.
Best hearth rug	"
Best double carpet coverlet	"
2d best.....	"
Best 5 dozen pairs cotton wove stockings	"

Best 5 dozen pairs linen wove stockings	No award.
Best 5 dozen pairs cotton wove socks	"
Best 5 dozen pairs linen wove socks	"
Best 5 pounds linen sewing thread	"
Best display oil cloth table covers	"
Best display cordage	"
Harrison Rice, Springfield, best bale flax moss for upholsters	\$5
Best bale flax moss for mattresses	No award.
Harrison Rice, Springfield, best bale rope stock for spinners	5
Best bale tow for bagging or awning	No award.
Best and largest display of flax goods manufactured in Ohio	"
Thos. Piper & Co., West Liberty, best display of horse blankets	10
Best 10 fleeces Saxony wool	No award.
Best 10 fleeces Merino wool	"
G. R. Starr, Elyria, best 10 fleeces long wool	10

AWARDS ON MISCELLANEOUS MANUFACTURES.

Irvine & Houston, Springfield, best traveling trunk	\$10
" " best carpet sack	5
Best pair dress boots	No award.
Best pair heavy boots	"
Best pair gents' dress shoes	"
Best pair congress gaiters	"
Best pair lady's gaiters	"
Best pair lady's slippers	"
Best pair booties	"
Republic Printing Co., Springfield, best display of bound account books	10
" " " paper	10
Best display paper hangings and borders	No award.
R. F. Hayward, Springfield, best silk hat	5
W. J. Winter, Springfield, best soft hat	3
" " best fur cap	3
Best made suit of gentlemen's clothing	No award.
Republic Printing Co., Springfield, best display of printing	10
W. J. Winter, Springfield, best buck gloves and mittens	5
" " best display lady's furs	5
Best fur gloves and mittens	No award.
Irvine & Houston, Springfield, best fur robe	10
Republic Printing Co., Springfield, best paper boxes	5
Best sheep-skin mats	No award.
Irvine & Houston, Springfield, best set of carriage harness	15
Best set of farm harness	No award.
J. H. Lorimer, Harmony, best display of leather	10
Irvine & Houston, Springfield, best display saddles and bridles	10
" " " horse collars	5

FIFTH DEPARTMENT.

FARM AND HORTICULTURAL PRODUCTS.

AWARDS ON FLOUR, GRAIN AND SEEDS.

Warder & Barnett, Springfield, best barrel white wheat flour.....	\$10
N. G. Haywood, Tiffin, 2d best	5
Jacob Kissell, Springfield, best barrel red wheat flour	10
Warder & Barnett, Springfield, 2d best.....	5
George A. Deitz, Chambersburg, Pa., best 2 bushels white winter wheat.....	10
William Lang, Tiffin, 2d best	5
George A. Deitz, Chambersburg, Pa., best 2 bushels amber winter wheat	10
2d best.....	No award.
George A. Deitz, Chambersburg, Pa., best 2 bushels red winter wheat	10
Martin Snyder, Donaldsville, 2d best	5
Thomas Binnington, Laporte, best sample of spring wheat, half bushel.....	5
2d best.....	No award.
W. H. Covault, Casstown, best sample of rye, half bushel	10
“ “ 2d best	5
Nelson Van Wormer, Elyria, best sample of oats, half bushel.....	10
Absolom Decker, Millersport, 2d best	No award.
Jesse Mead, Bowlingville, best sample of buckwheat, half bushel.....	5
Matilda Ramsey, Centerville, best sample of flax seed, half bushel.....	5
Best sample of hops, 5 pounds.....	No award.
Matilda Ramsey, Centerville, best sample of timothy seed, half bushel.....	5
Jesse Mead, Bowlingville, best sample of clover seed, half bushel	5
Best sample of blue grass seed	No award.
Best sample of orchard grass.....	“
Abraham Decker, Millersport, best 2 bushels yellow corn in ear.....	10
R. J. Johnston, Clifton, 2d best.....	5
A. J. Fuller, Alcona, Miami Co., best 2 bushels white corn in ear.....	10
Elias Collins, Clifton, 2d best	5
W. J. Covault, Casstown, best half bushel of barley.....	10
2d best.....	No award.
Jesse Mead, Bowlingville, best 20 lbs. broom corn.....	10
2d best.....	No award.
Best display of meadow or pasture.....	“
Best display of grass seeds, 20 varieties, including clovers.....	“
2d best.....	“

REPORT OF COMMITTEE.

We, the undersigned Committee on flour, grain, grasses and seeds, would respectfully say that we found the competition on the above mentioned articles was very close. We

are sorry to say that your honorable body had not offered any premium on barley, but we found the exhibition was very fine, and we recommend it for premium.

HENRY HOAK,
JOHN F. HARRISON,
FRANK A. GREENE,
J. SNYDER.

AWARDS ON CHEESE—DOMESTIC MANUFACTURE.

G. H. Gates, Wellington, best and largest lot.....	\$30
“ “ 2d best.....	15
“ “ best cheese under 1 year old	15
“ “ 2d best cheese under 1 year old	8

CHEESE—FACTORY MADE.

C. S. Gates, Brooklyn, best and largest lot.....	\$30
“ “ 2d best.....	15
“ “ best cheese under 1 year	15
Marysville Factory, Marysville, 2d best.....	8

SWEEPSTAKES ON CHEESE.

G. H. Gates, Wellington, best and largest display of cheese.....	Silver Medal.
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AWARDS ON BUTTER, BREAD, ETC.

John T. Fauver, Laporte, best lot 10 pounds butter in rolls.....	\$3
Matilda Ramsey, Centerville, 2d best	5
“ “ best lot 25 pounds butter made in May or June.....	15
W. H. Covault, Casttown, 2d best.....	7
John T. Fauver, Laporte, best tub or firkin, 50 pounds, made at any time	20
Elizabeth Snider, Donaldsville, 2d best	10
Best 5 cans condensed milk	No award.
2d best.....	“
Mrs. Wm. Woodward, West Liberty, best 3 loaves domestic white bread.....	\$6
Best 5 loaves baker's bread	No award.
Best pilot bread	“
Mrs. Wm. Woodward, West Liberty, best biscuit.....	2
Matilda Ramsey, Centerville, best soda biscuit.....	2
Springfield Steam Bakery, Springfield, best crackers (butter).....	2
“ “ “ “ (sweet)	2
“ “ “ “ (Boston)	2
Mrs. James Whitely, Springfield, best domestic corn bread.....	5
Best domestic rye bread	No award.
S. B. McLane, Xenia, best domestic brown bread.....	\$5
Mrs. L. Bird, Springfield, best domestic Graham bread	5

Mrs. A. Morehouse, Springfield, best 3 hams	\$10
Best 6 beef tongues	No award.
Best 6 pieces dried beef, 8 pounds each.....	"

REPORT OF COMMITTEE.

Your committee on butter, bread, etc., would respectfully report, that we find the competition in butter very spirited. Your committee were much puzzled, after testing the many packages of butter, in rendering a decision as to who were justly entitled to premiums.

To make good butter, the cream must be churned sweet, and one pound of salt thoroughly worked into every eight pounds of butter.

Good bread, biscuits and crackers, are best made by those who best understand their business.

To make hams flavory, use sassafras chips in smoking and curing.

O. C. TILLINGHAST,
S. RICHMOND,
M. E. DURHAM.

AWARDS ON HONEY, PRESERVES, PICKLES, ETC.

Mrs. A. Church, Painesville, best 10 pounds honey	\$5
J. J. Millinger, Springfield, 2d best	3
Miss Adelia Bishop, Springfield, best canned tomatoes.....	3
W. H. Covault, Casstown, best canned blackberries	3
A. A. Swope, Indianapolis, Ind., best canned raspberries.....	3
Mrs. George Yeazel, Catawba, best canned peaches.....	3
Mrs. Leonard Sheaf, Springfield, best canned pears	3
Mrs. L. Bird, Springfield, best canned apples.....	3
Mrs. George Yeazel, Catawba, best canned quinces.....	3
A. A. Swope, Indianapolis, Ind., best canned cherries	3
" " best canned gooseberries.....	3
Mrs. George Mitchell, Casstown, best canned currants	3
Mrs. George Yeazel, Catawba, best canned grapes	3
A. A. Swope, Indianapolis, Ind., best and largest variety of canned fruits	10
Matilda Ramsey, Centerville, best and largest variety of pickles.....	10
S. B. McLane, Xenia, best and largest variety of jellies.....	10
Mrs. R. J. Gore, Springfield, best apple jelly	3
Mrs. George Mitchell, Casstown, best currant jelly	2
Mrs. George Yeazel, Catawba, best peach jelly	3
Mrs. J. Schenck, East Sycamore, best quince jelly	3
Mrs. George Yeazel, Catawba, best preserved quinces.....	3
Jennie Huffman, Springfield, best preserved peaches	3
Mrs. R. J. Gore, Springfield, best preserved pears.....	3
Mrs. L. Bird, Springfield, best preserved apples	3
Matilda Ramsey, Centerville, best preserved plums	3
Mrs. Joseph Caldwell, Cedarville, best tomato catsup	3
S. B. McLane, Xenia, best cucumber catsup	3

S. B. McLane, Xenia, best pickled cucumbers	\$3
Matilda Ramsey, Centerville, best pickled peaches.....	3
“ “ best pickled tomatoes.....	3
Best pickled walnuts.....	No award.
Mrs. E. Mayhew, Urichsville, best pickled butternuts	\$3
Matilda Ramsey, Centerville, best pickled mangoes and melons	3
“ “ best pickled onions.....	3
“ “ best pickled gherkins	3
Best specimen of portable soups.....	No award.
Best specimen of concentrated vegetables	“
Matilda Ramsey, Centerville, best gallon maple syrup	3
“ “ best 10 pounds maple sugar	5
A. Johnson, Clifton, best cider vinegar	5

REPORT OF COMMITTEE.

Your committee awarded A. A. Swope, Indianapolis, Ind., first premium on canned raspberries, cherries and gooseberries; also on display of canned fruits. Since awarding the above premiums, it has been satisfactorily proven to your committee, that a portion of said fruits were not canned, but put up in alcohol, consequently were not entitled to said premiums.

O. BURRAS,
Mrs. W. A. PROUT, Jr.
Miss S. J. COCHRAN.

AWARDS ON POTATOES.

W. E. Mears, Milford, best half bushel Neshannock potatoes.....	\$5
O. Burras, North Fairfield, best half bushel white peach blow potatoes	5
John H. Roberts, Urbana, best half bushel Jersey peach blow potatoes	5
Jacob Conklin, Urbana, best half bushel Buckeye potatoes.....	5
J. I. Covell, Sandusky, best half bushel early rose potatoes.....	5
Mrs. E. Mayhew, Uhrichsville, best and earliest potatoes	10
J. I. Covell, Sandusky, best half bushel any other variety of potatoes.....	3
“ “ best 10 varieties Irish potatoes, half peck each.....	10
J. Elmer Kissell, Springfield, 2d best	5
D. C. Richmond, Sandusky, best half bushel sweet potatoes	5
“ “ best display of sweet potatoes	10

REPORT OF COMMITTEE.

Your committee recommend that the Board offer a second premium on Irish potatoes, also on sweet. There is a large number of entries, and some very fine specimens that are deserving of second premiums.

C. S. GATES,
C. W. TAYLOR,
JOHN HULL.

AWARDS ON VEGETABLES.

N. J. Kelly, East Cleveland, best 6 parsnips	\$3
J. I. Covell, Sandusky, 2d best	2
N. J. Kelly, East Cleveland, best 6 carrots	3
J. I. Covell, Sandusky, 2d best	2
N. J. Kelly, East Cleveland, best 6 long blood beets	3
Wm. Ashworth, Tippecanoe City, 2d best	2
N. J. Kelly, East Cleveland, best 6 turnip beets	3
M. A. Runyan, Springfield, 2d best	2
Thomas W. Knight, Sandusky, best 6 mangold wurzels	3
J. I. Covell, Sandusky, 2d best	2
Wm. Ashworth, Tippecanoe City, best display of beets	5
N. J. Kelly, East Cleveland, best 6 white turnips	3
Henrietta Cook, Springfield, 2d best	2
George Powers & Son, Perrysburg, best peck of tomatoes	5
S. A. Thomas, Dialton, 2d best	3
O. Burras, North Fairfield, best display of tomatoes	5
James Killen, Springfield, best 3 drumhead cabbages	3
Wm. Ashworth, Tippecanoe City, 2d best	2
James Killen, Springfield, best 2 heads of Dutch cabbages	3
N. J. Kelly, East Cleveland, 2d best	2
Wm. Ashworth, Tippecanoe City, best 4 heads any other variety	3
N. J. Kelly, East Cleveland, 2d best	2
N. J. Kelly, East Cleveland, best 3 heads cauliflower	3
R. R. Dory, Springfield, 2d best	2
O. Burras, North Fairfield, best half peck red onions	3
R. R. Dory, Springfield, 2d best	2
James Killen, Springfield, best half peck yellow onions	2
O. Burras, Springfield, 2d best	2
R. R. Dory, Springfield, best half peck white onions	3
James Killen, Springfield, 2d best	2
Wm. Ashworth, Tippecanoe City, best half peck potato onions	3
N. J. Kelly, East Cleveland, 2d best	2
O. Burras, North Fairfield, best display of onions	5
Wm. Ashworth, Tippecanoe City, best half peck peppers for pickling	3
Wm. Ashworth, Tippecanoe City, 2d best	2
Mrs. E. Mayhew, Uhrichsville, best display of peppers	5
Wm. Ashworth, Tippecanoe City, best 12 roots salsify	3
N. J. Kelly, East Cleveland, 2d best	2
James Killen, Springfield, best 6 stalks celery	3
Joseph H. Killen, Springfield, 2d best	2
N. J. Kelly, East Cleveland, best half dozen marrow squashes	3
J. I. Covell, Sandusky, 2d best	2
D. C. Richmond, best half dozen Hubbard squashes	3
O. Burras, North Fairfield, 2d best	2
J. I. Covell, Sandusky, best 3 winter crook-neck squashes	3
O. Burras, North Fairfield, 2d best	2
John Kiblinger, Springfield, best French squashes	3

J. I. Covell, Sandusky, 2d best	\$2
O. Burras, North Fairfield, best display of squashes	5
Reuben Huffman, Springfield, best 3 pumpkins.....	3
J. F. Stewart, Clifton, 2d best.....	2
Richard Collier, Springfield, best display of pumpkins	5
N. J. Kelly, East Cleveland, best dozen of sweet corn, green.....	3
O. Burras, North Fairfield, 2d best.....	2
A. C. Judson, Grand Rapids, best display of sweet corn, green or dry	5
Reuben Huffman, Springfield, best 2 mountain sweet watermelons.....	3
D. B. Miller, Washington C. H., 2d best.....	2
“ “ “ “ best 3 watermelons, any other variety.....	3
Reuben Huffman, Springfield, 2d best	2
W. B. Poling, Yellow Springs, best 3 green-fleshed muskmelons.....	3
D. C. Richmond, Sandusky, 2d best.....	2
Reuben Huffman, Springfield, best 3 yellow-fleshed muskmelons.....	3
J. I. Covell, Sandusky, 2d best	2
J. I. Covell, Sandusky, best and greatest display of melons, all varieties, both water- melons and muskmelons	5
J. I. Covell, Sandusky, best 6 cucumbers.....	2
“ “ best half peck lima beans, in pod	3
Wm. Ashworth, Tippecanoe City, 2d best.....	2
“ “ best half bushel kidney bush beans, in pod	3
Mrs. E. Mayhew, Uhrichsville, 2d best.....	2
O. Burras, North Fairfield, best and greatest variety garden beans	5
N. J. Kelly, East Cleveland, best half peck gherkin cucumbers.....	3
O. Burras, North Fairfield, best 3 egg plants	2
Wm. Ashworth, Tippecanoe City, best half peck field peas, dry	3
O. Burras, North Fairfield, 2d best	2
Wm. Ashworth, Tippecanoe City, best half peck garden peas.....	5
Mrs. E. Mayhew, Uhrichsville, 2d best.....	2
Wm. Ashworth, Tippecanoe City, best and greatest variety of peas	5
O. Burras, North Fairfield, best and greatest variety of vegetables raised by one ex- hibitor.....	25.
J. I. Covell, Sandusky, 2d best	15

REPORT OF COMMITTEE.

Your Committee would most respectfully report that we find in the vegetable department an excellent display. The competition is so close, your Committee find it a very difficult and arduous task to award the premiums, to give all parties concerned general satisfaction.

The very fine display of pumpkins, squashes, turnips, beets, peas, beans, and other articles too numerous to mention, reflect very much credit upon the honest cultivators of the soil.

HENRY RIDENOUR,
JOEL M. TUTTLE,
M. LIPSETT.

AWARDS ON SUMMER AND FALL APPLES.

T. P. Johnson, Osborne, best 6 varieties.....	\$15
John D. Kirkpatrick, Urbana, 2d best.....	10
Henry Gulick, Bevis, best 3 varieties.....	8
Wm. Miller, Port Clinton, 2d best.....	5
“ “ best approved new variety.....	2
“ “ best 3 varieties of large.....	3
J. W. Ross, Perrysburg, best 3 varieties of market.....	6
2d best.....	No award.
John A. Warder, Cleves, best variety dessert.....	5
Wm. Miller, Port Clinton, 2d best.....	3
T. P. Johnson, Osborne, best and most handsomely arranged basket, containing 1 peck, 6 varieties.....	6
John D. Kirkpatrick, Urbana, 2d best.....	3
Wm. Miller, Port Clinton, best display of 15 varieties, by amateur.....	20
A. M. Gatch & Sons, Milford, 2d best.....	10
J. H. W. Mumma, Dayton, best display of 15 varieties, by professional.....	20
George Powers & Sons, Perrysburg, 2d best.....	10

AWARDS ON WINTER APPLES.

T. P. Johnson, Osborne, best 10 varieties.....	\$20
J. H. W. Mumma, Dayton, 2d best.....	10
A. M. Gatch & Sons, Milford, best 5 varieties.....	12
J. H. W. Mumma, Dayton, 2d best.....	6
T. P. Johnson, Osborne, best 5 plates of large.....	10
H. Heffelbower, Monclovia, 2d best.....	7
John A. Warder, Cleves, best variety of dessert.....	5
E. S. Slingluff, Canal Dover, 2d best.....	3
A. M. Gatch & Sons, Milford, best variety of market.....	15
H. Heffelbower, Monclovia, 2d best.....	10
A. M. Gatch & Sons, Milford, best half bushel basket of 10 varieties.....	10
J. D. Kirkpatrick, Urbana, 2d best.....	7
T. P. Johnson, Osborne, best display of 30 varieties, grown by amateur.....	30
A. M. Gatch & Sons, Milford, 2d best.....	20
George Powers & Son, Perrysburg, best display of 30 varieties, grown by professional.....	30
Henry Gulick, Bevis, 2d best.....	20
N. Ohmer, Dayton, best plate of 5 Baldwins.....	2
Wm. Miller, Port Clinton, best plate of 5 Belleflower.....	2
Henry Milner, Sandusky, best plate of 5 Belmont.....	2
J. B. Marshall, Cleveland, best plate of 5 Canada Red.....	2
G. R. Mumma, Dayton, best plate of 5 Celestia.....	2
John A. Warder, Cleves, best plate of 5 Ben Davis.....	2
Best plate of 5 Jefferis.....	No award.
J. W. Ross, Perrysburg, best plate of 5 Jonathan.....	2
N. Ohmer, Dayton, best plate of 5 King of Tompkins county.....	2
John A. Warder, Cleves, best plate of 5 melon.....	2
N. Ohmer, Dayton, best plate of 5 Northern Spy.....	2

S. B. Marshall, Cleveland, best plate of 5 Ohio Nonpareil.....	\$2
Wm. Miller, Port Clinton, best plate of 5 Peck's Pleasant.....	2
“ “ “ Esopus Spitzenburg	2
J. W. Ross, Perrysburg, best plate of 5 Evening Party.....	2
N. Ohmer, Dayton, best plate of 5 Rambo.....	2
Wm. Miller, Port Clinton, best plate of 5 Rhode Island Greening.....	2
N. Ohmer, Dayton, best plate of 5 Rome Beauty.....	2
R. B. Leming, Milford, best plate of Roxbury Russet.....	2
Martin Varner, Painesville, best plate of 5 Wagner.....	2
Wm. Longstreth, Sr., Dayton, best plate of 5 White Pippin.....	~

REPORT OF COMMITTEE.

The committee on Winter Apples report that the display of this fruit was exceedingly large and fine, notwithstanding the very short crop in some parts of the State. A large portion of the entries, as usual, were from the north-western section of the State. Still most of the best apples exhibited were from the central and south-western sections.

Among the numerous lots of fine apples deserving of commendation, we would specially mention the large display made by Col. D. C. Richmond, of Sandusky, who very generously declined to enter them in competition for the premiums, but only for exhibition.

We would respectfully suggest that the labors of the different fruit committees might be much easier, and more correctly performed, if there could be more system in the arrangement of the samples when placed on the tables in the hall.

M. B. BATEHAM,
 LEO WELTZ,
 W. E. MEARS.

APPLE SWEEPSTAKES.

Wm. Miller, Port Clinton, best 40 varieties of summer, fall and winter apples.....	\$40
James W. Ross, Perrysburg, 2d best.....	20

REPORT OF COMMITTEE.

The committee found the display on sweepstakes unusually fine, and the competition in some three or four entries so close that it was with some difficulty to decide in awarding premiums.

We noticed some 40 varieties from D. C. Richmond, of Sandusky, (not entered for competition), deserving of notice by the committee.

S. B. MARSHALL,
 DANIEL HAMILTON,
 H. H. HEIKES.

AWARDS ON PEACHES, PEARS, QUINCES AND PLUMS.

PEACHES.

M. B. Bateham, Painesville, best 6 varieties peaches, 6 each.....	\$12
2d best.....	No award.
H. G. Tryon, Willoughby, best 3 varieties of peaches, 6 each.....	8
2d best.....	No award.

H. G. Tryon, Willoughby, best plate of 1 variety.....	\$3
Wm. Longstreth, Dayton, 2d best.....	2
Best new seedling or variety.....	No award.
2d best.....	No award.
Best display of 12 varieties, grown by amateur.....	No award.
H. G. Tryon, Willoughby, 2d best.....	15
A. P. Bateham, Painesville, best display of 12 varieties, grown by professional.....	25
M. B. Bateham, Painesville, 2d best.....	15

PEARS.

Henry Gulick, Bevis, best 3 varieties summer and fall pears.....	\$10
S. B. Marshall, Cleveland, 2d best.....	5
“ “ best 5 varieties summer and fall pears.....	10
J. A. Harris, Cleveland, 2d best.....	5
S. B. Marshall, Cleveland, best 12 varieties fall and winter pears.....	15
N. Ohmer, Dayton, 2d best.....	10
S. B. Marshall, Cleveland, best half peck seckles.....	5
Wm. Ramsey, Dayton, 2d best.....	3
Best half peck Bartletts.....	No award.
2d best.....	No award.
S. B. Marshall, Cleveland, best plate seckles.....	2
“ “ “ Bartletts.....	2
J. A. Harris, Cleveland, best plate Flemish Beauty.....	2
S. B. Marshall, Cleveland, best plate Louisa Bonne de Jersey.....	2
Mrs. John V. Pnrsell, Donaldsville, best plate Onondaga.....	2
J. A. Harris, Cleveland, best plate Beurre Diel.....	2
George Powers & Son, Perrysburg, best plate Duchess d'Angouleme.....	2
Henry Gulick, Bevis, best plate Beurre Clairgeau.....	2
S. B. Marshall, Cleveland, best 3 plates large pears.....	6
J. A. Harris, Cleveland, 2d best.....	3
S. B. Marshall, Cleveland, best 5 plates market pears.....	10
J. A. Harris, Cleveland, 2d best.....	5
Best new variety.....	No award.
J. A. Harris, Cleveland, best 1 variety dessert.....	3
2d best.....	No award.
Best display of 20 varieties by amateur.....	No award.
J. A. Harris, Cleveland, 2d best.....	10
S. B. Marshall, Cleveland, best display of 20 varieties, by professional.....	15
George Powers & Son, Perrysburg, 2d best.....	10

QUINCES.

James Dunapace, Perrysburg, best 12 quinces.....	\$5
Thomas Shaw, Springfield, 2d best.....	3
L. U. Todd, Vermillion, best peck quinces.....	10
Mrs. H. C. Torbert, Springfield, 2d best.....	5

PLUMS.

Best display of 5 varieties plums.....	No award.
2d best.....	No award.
Best display of 6 varieties, 6 each.....	No award.

2d best.....	No award.
Best plate of 12 specimens.....	No award.
2d best.....	No award.

REPORT OF COMMITTEE.

The committee request that in future the competing varieties in different classes be arranged together, in order that they may be intelligently and justly compared; the present want of system, involving great labor for the committees, and almost impossibility of doing justice to competitors, where the competition is at all close. We report that we find the display, as a whole, interesting and creditable to our State as well as to the growers.

GEORGE W. CAMPBELL,
J. W. DUNHAM,
H. H. HEIKES.

AWARDS ON GRAPES—HARDY.

J. A. Harris, Cleveland, best 10 varieties, 6 bunches each.....	\$15
L. U. Todd, Vermillion, 2d best	8
L. J. & J. M. Cahoon, North Dover, best 6 varieties, 6 bunches each	10
L. U. Todd, Vermillion, 2d best.....	5
J. A. Harris, Cleveland, best 3 varieties 6 bunches each.....	8
L. J. & J. M. Cahoon, North Dover, 2d best.....	4
Best new and valuable seedling	No award.
J. A. Harris, Cleveland, best display of 15 varieties, 3 bunches each.....	25
L. U. Todd, Vermillion, 2d best	15
“ “ best 6 bunches Catawba.....	3
“ “ “ Isabella	3
J. A. Harris, Cleveland, best 6 bunches Hartford prolific.....	3
“ “ best bunch Creveling.....	3
L. J. & J. M. Cahoon, North Dover, best 6 bunches Salem	3
J. A. Harris, Cleveland, best 6 bunches Concord.....	3
L. U. Todd, Vermillion, best 6 bunches Delaware	3
J. A. Harris, Cleveland, best 6 bunches Ives.....	3
S. B. Marshall, Cleveland, best 6 bunches Diana	3
L. U. Todd, Vermillion, best 6 bunches Iona	3
“ “ “ Israella	3
Best 6 bunches Adirondac.....	No award.
J. A. Harris, Cleveland, best 6 bunches Rebecca.....	3
“ “ “ Allen's Hybrid.....	3
“ “ “ Martha	3
“ “ “ Walter	3
L. U. Todd, Vermillion, best 6 bunches Norton's Virginia seedling.....	3
“ “ “ Eumelan	3
S. B. Marshall, Cleveland, best early grape.....	3
L. J. & J. M. Cahoon, North Dover, best late grape.....	5
Best display of Ohio wines.....	No award

REPORT OF COMMITTEE.

The Committee in this department report that they have awarded the premiums as they are set forth, respectively, in the foregoing schedule.

The exhibition of grapes, both in variety and quality, has never been excelled at any former exhibition. Mr. Harris, of Cleveland, showed 53 varieties, and there are about 70 varieties on exhibition. Several entries were made in the class "seedlings never before exhibited," and the Committee have taken the liberty of awarding no premiums in this class, believing that nothing was shown superior to many old and well known varieties. They would deprecate the prominence that is given to seedlings, at the expense of varieties that experience, climate and seasons have proved reliable for general cultivation.

A. B. BUTTLES,
B. W. STEVENSON,
A. MCINTOSH.

REPORT OF SPECIAL COMMITTEE ON KANSAS FRUITS.

To the Ohio State Board of Agriculture :

GENTLEMEN :—Your special Committee appointed to pass upon the merits of fruit, grain and vegetables exhibited, but not competing for premiums, at the State Fair of 1871, beg leave to report that they have discharged their duty, and offer the following :

We find that the above collection was sent here by the State Emigration Society, of which George T. Anthony is President, and A. B. Havens Secretary. The purpose of the exhibition has for its ulterior object, the comparison of the Kansas growth of fruits, vegetables and cereals, with that of her sister States, and to illustrate, that although situated upon the borders of civilization, she seems to be the peer of any in advanced agriculture, and that her soil and climate are capable of producing all products belonging to the latitude.

On a critical examination, we find represented in this collection thirty-seven named varieties of apples, that for size, flavor and perfection, are equal, if not superior to any collection on the ground. We find one variety of peaches of superior size; we find a large collection of wheat, rye, oats, barley, buckwheat and corn; also samples of the castor beans, peanuts, brown corn, potatoes, onions, beets, etc., all the product of that young and thriving State, and all showing a perfect growth and superior size, highly creditable to that commonwealth.

In conclusion, we desire to express a favorable opinion of the enterprise and energy that sends out, so great a distance, such a large collection of soil products, and express an opinion that such exhibitions cannot fail to work good to the agricultural public, and we desire to see the principle carried out by other States.

Respectfully submitted,
JOHN A. WARDER,
GEO. W. CAMPBELL,
M. B. BATEHAM.

SIXTH DEPARTMENT.

FLOWERS AND FINE ARTS.

AWARDS ON FLOWERS.

John M. Clemens, Urbana, best floral ornament.....	\$10
2d best.....	No award.
Albert Eglinger, Springfield, best and most handsomely arranged basket of flowers for table	5
Miss H. C. Hastings, Springfield, 2d best.....	3
Best ornamental fruit stand	No award.
Albert Eglinger, Springfield, best ornamental flower stand	10
E. Steiner, Dayton, best and most beautiful hanging basket for flowers.....	5

PROFESSIONAL LIST—STOVE AND GREENHOUSE PLANTS.

John M. Clemens, Urbana, best collection, 20 varieties.....	\$15
Albert Eglinger, Springfield, 2d best.....	10
John M. Clemens, Urbana, best collection 12 varieties.....	8
George R. Mumma, Dayton, 2d best	5
John M. Clemens, Urbana, best specimen plant in or out of bloom.....	3
“ “ best collection, 10 varieties variegated leaved plants	5
Albert Eglinger, Springfield, 2d best.....	3
John M. Clemens, Urbana, best single specimen.....	1
Best collection aloes and cactus in pots	No award.
Albert Eglinger, Springfield, best collection fuchsias, in pots.....	3
George R. Mumma, Dayton, 2d best	2
Albert Eglinger, Springfield, best collection geraniums in bloom.....	3
George R. Mumma, Dayton, 2d best	2
John M. Clemens, Urbana, best collection ferns and lycopodiums	5
George R. Mumma, Dayton, 2d best	2
Albert Eglinger, Springfield, best and largest collection verbenas, grown in pots....	5
John M. Clemens, Urbana, 2d best.....	3
Albert Eglinger, Springfield, best and greatest variety petunias in pots.....	2

CUT FLOWERS.

Albert Eglinger, Springfield, best and largest collection dahlias, 24 named varieties. \$5	
John M. Clemens, Urbana, 2d best.....	3
“ “ best 12 varieties dahlias.....	3
Albert Eglinger, Springfield, 2d best.....	2
“ “ best and largest collection roses, named varieties.....	5
2d best.....	No award.

Albert Eglinger, Springfield, best 12 roses	\$3
2d best	No award.
Albert Eglinger, Springfield, best and largest collection verbenas, named varieties..	5
2d best	No award.
Albert Eglinger, Springfield, best 12 distinct named varieties of verbenas	3
2d best	No award.
Best and largest collection phloxes, named varieties	"
2d best	"
Best display asters	"
Best display gladiolus	"
2d best	"
Best display coxcombs and amaranths	"
Best display double zinnias	"
Albert Eglinger, Springfield, best and greatest display cut flowers, other than above.	5
2d best	No award.
Albert Eglinger, Springfield, best pair parlor boquets, any style, not to exceed 12 inches	2
John M. Clemens, Urbana, 2d best	1
Best collection native flowers, with list of names	No award.
2d best	"

AMATEUR LIST—STOVE AND GREEN HOUSE PLANTS.

Best collection, 20 varieties	No award.
Mrs. P. J. Lofland, Columbus, 2d best	\$10
Best collection, 12 varieties	No award.
2d best	"
Mrs. C. Knox, Springfield, best specimen plant, in or out of bloom	3
Best collection 10 varieties variegated leaved plants	No award.
2d best	"
Best single specimen	"
Best collection aloes and cactus in pots	"
Best collection fuchsias, in pots	"
2d best	"
Best collection geraniums in bloom	"
2d best	"
Best collection ferns and lycopodiums	"
Mrs. P. J. Lofland, Columbus, 2d best	2
Mrs. A. Church, Painesville, best and largest collection verbenas grown in pots	5
Miss Clara McClelland, Columbus, 2d best	3
Best and greatest variety petunias	No award.

CUT FLOWERS.

Mrs. A. Church, Painesville, best and largest collection dahlias, 24 named varieties..	\$5
2d best	No award.
Mrs. A. Church, Painesville, best 12 varieties dahlias	5
2d best	No award.
Best and largest collection roses, named varieties	"
2d best	"

Best 12 roses	No award.
2d best.....	"
Mrs. A. Church, Painesville best and largest collection verbenas, named varieties	\$3
Clara McClelland, Columbus, 2d best.....	3
Mrs. A. Church, Painesville, best 12 distinct named varieties	3
2d best.....	No award.
Miss Clara McClelland, Columbus, best display of phloxes.....	2
2d best.....	No award.
Mrs. A. Church, Painesville, best display asters	2
" " best display gladiolus.....	3
2d best.....	No award.
J. H. Mumma, Dayton, best display coxcombs and amaranths.....	2
" " best display double zinnias.....	2
Mrs. J. W. Shinn, Selma, best and greatest display of flowers other than above.....	5
Mrs. A. Church, Painesville, 2d best	3
Mrs. R. J. Gore, Springfield, best pair parlor boquets, any style, not to exceed 12 inches	2
Mrs. A. Church, Painesville, 2d best	1
Best collection native flowers, with list of names.....	No award.
2d best.....	"

AWARDS ON DRAWINGS, PAINTINGS, ETC.

Clark & Wise, Springfield, best life-size photograph, colored in oil, by Ohio artist ..	\$20
T. Teeple & Co., Wooster, best life-size photograph, in water colors.....	15
C. T. Webber, Cincinnati, best photograph from life, in oil.....	20
Best photograph in oil of horse, bull or cow.....	No award.
Best specimen of painting, in oil, by American artist.....	"
Miss Mary Spencer, Cincinnati, best specimen of painting, in oil, by Ohio artist....	20
Clark & Wise, Springfield, best specimen in water colors.....	10
Miss Mary Spencer, Cincinnati, best landscape from nature, in oil, by an Ohio artist.	20
Mrs. E. Rogers, Springfield, best landscape from nature, in water colors.....	10
Best original poetical painting, by Ohio artist.....	No award.
Best original historical painting, by Ohio artist.....	"
T. A. Beach, Delaware, best specimen of uncolored photograph.....	Diploma.
Julia C. Huntington, Springfield, best specimen of different objects in natural history, in oil or other colors, by Ohio artist.....	Dip. and 20
E. Edmondson, Dayton, best specimen fruit or flower painting, in oil.....	Dip. and 10
Miss Eliza Van Deman, Delaware, best specimen fruit or flower painting, in water colors	Dip. and 5
Best specimen Ohio landscape, in oil, by Ohio artist.....	No award.
Miss Mary Spencer, Cincinnati, best exhibition of paintings by Ohio or foreign artist	50
Clark & Wise, Springfield, best fancy portrait, by Ohio artist.....	10
" " " painting, in water colors.....	10
Homer Lee, Mansfield, best engraving.....	10
Best wood engraving.....	No award
Best lithography.....	"

Best porcelain painting and gilding.....	No award.
J. W. Van Sickle, Springfield, best specimen penmanship.....	\$5
Miss Julia C. Huntington, Springfield, best crayon drawing.....	5
Best pencil drawing.....	No award.
Best specimen porcelain photograph.....	"
Clark & Wise, Springfield, best photograph of infant, colored in oil.....	10
" " " in water colors.....	10
Best photograph of infant, uncolored.....	No award.
Best specimen of grainuig.....	"
M. Fisher, Springfield, best fancy sign painting.....	10

AWARDS ON SCULPTURE, ETC.

Best sculpture by Ohio artist.....	No award.
Dodds & Caskey, Xenia, best collection marble work, by Ohio artists.....	\$10
Best marble mantle.....	No award.
Best carving in wood.....	"
Mrs. L. Speer, Columbus, best collection and greatest variety of insects.....	10
M. Lippett, Sandusky, best collection and greatest variety of Ohio birds, prepared..	20
" " " " quadrupeds, prepared.	10

AWARDS ON DESIGNS.

Best design for farm house.....	No entry.
Best design for farm barn.....	"
Best design for dairy barn.....	"
Best design for cheese factory.....	"
Best design for poultry house.....	"
Best design for farm gate.....	"
Best design for granary.....	"
Best bridge (model of).....	"
Best architectural drawing.....	"
2d best.....	"

AWARDS ON INSTRUMENTS—PHILOSOPHICAL, ETC.

Charles M. Evans, Cincinnati, best artificial limbs.....	Diploma.
Best surgical instruments.....	No award.
Best set of optical instruments.....	"
Dill's Dental Co., Dayton, best specimen dentistry.....	Diploma.
Best theodolite.....	No award
Best level.....	"
Best surveyor's compass.....	"
Best achromatic telescope.....	"
Best optical apparatus.....	"
Best balance.....	"

J. G. Bowersmith, of Mansfield, best thermometer.....	Diploma.
Henry Twitchell, of Cincinnati, best acidometer.....	"
Best electro-magnetic apparatus.....	No award.
Best electric telegraph.....	"
Best electric machine.....	"
Best galvanic battery and apparatus.....	"
Best set drawing instruments.....	"
John P. Allen, Springfield, best chronometer.....	Diploma.
" " best clock, (8 days).....	\$5
Best specimen silver ware, with agricultural designs, suitable for premiums..	No award.
Best specimen Argentine or Britannia ware.....	"
Best turned and cast Britannia.....	"
J. G. Bowersmith, Mansfield, best barometer.....	Diploma.
H. Twitchell, Cincinnati, best hydrometer.....	"

AWARDS ON MUSICAL INSTRUMENTS.

Best grand or semi-grand piano forte.....	No award.
J. F. Harris & Co., Columbus, best and cheapest piano, with case of iron or wood, finished in oil or varnish.....	Silv. Med.
J. F. Harris & Co., Columbus, best square piano.....	"
C. D. Honk, Springfield, best violin.....	\$5
J. F. Harris & Co., Columbus, best reed organ, with two or more sets of reeds..	Silv. Med.
J. C. White, Springfield, best and cheapest parlor organ.....	"
Best melodeon, 1 set reeds.....	No award.
J. F. Harris & Co., Columbus, best melodeon, 2 sets reeds.....	Diploma.
J. C. White, Springfield, best flute.....	3
" " clarinet.....	5
Best set of band instruments.....	No award.

COMMENDED ARTICLES.

FIRST DEPARTMENT.

Wm. R. Burnett, Springfield, mare 2 years old.
 J. B. Mahan, Allen P. O., boar 2 years old.
 Simon Beery, London, boar under 1 year old.
 D. W. Harris, DeGraff, sow with litter of pigs under 6 months old.
 Joseph Browning, Washington C. H., sow with litter of pigs over 6 months old.

SECOND DEPARTMENT.

Huber Gann & Co., Marion, horse hay rake (revolving).
 Hulburt & Page, Painesville, portable engine and road steamer.
 Columbus Machine Co., Columbus, steam pump.
 Dennis Michaels, Hopedale, horse power (sweep).
 J. C. Evans & Son, Delaware, ice plow.
 G. M. Peters & Co., Lancaster, rear delivery dropping attachment.
 Hulburt & Page, Painesville, Rider's patent road steamer.
 H. W. Harwell, Chicago, Illinois, Babcock's fire extinguisher.
 Hills & Hoag, New York city, self-feeding hand saw mill.
 S. O. Root, Lodi, N. Y., apple parer and slicer.
 George Braxton, Springfield, lifting and dumping machine.
 Jones & Parrott, Dayton, flour bolting machine.
 William Forest, Springfield, grinder for mowing machine knives.
 Lewis & White, Richmond, Ind., cane stripper.
 Norton & Blymer, Cincinnati, sugar cane mills and evaporator.
 R. R. Carpenter, Tippecanoe, car break and starter.
 Ohio Pump Co., Toledo, chain pump valve.
 " " pump boring machine.
 H. Bates, Dayton, self-adjusting hand drill.
 G. W. Turner, Springfield, hand garden cultivator.
 Wm. Gamwell, Chagrin Falls, pruning shears.
 J. B. Turner, Inkster, Mich., potato bug gatherer.
 W. A. Nixon, Alliance, machine for making threshing machine teeth.
 A. J. Ne'lis & Co., Pittsburg, Pa., specimen of iron and steel.
 Dayton Machine Co., Dayton, hand drill and cutter for bolts and screws.
 J. N. Babont, Oberlin, rafter hook.
 Bradner & Haven, Pine Creek, N. Y., separator and bagger.
 J. A. Bundy, Springfield, steam fire engine.
 H. Wickoff & Sons, Chagrin Falls, Grove's metallic sap spouts.
 P. P. Mast & Co., Springfield, broad-cast seeder for grain.
 " " grain drill and fertilizer attachment.
 " " " grass seed sower.
 Ferrill, Ludlow & Rogers, Springfield, spring hoe for grain drill.
 " " " hoe shifter for grain drill.
 E. B. & C. Smith, Wooster, improvement for raising and lowering platforms.
 Jardine & Bro., Springfield, display of plumbers and steam fitters work.
 J. R. Brownell, Dayton, champion steam generator.
 A. M. Jones & Co., Bucyrus, tire setter.

THIRD DEPARTMENT.

T. D. Enchelberger, Dayton, sewer and drain pipe.
 Walter & Sigler, Springfield, carriage gate.
 Rubber Paint Company, Cleveland, specimen of rubber paint.

- Columbus Sewer Pipe Co., Columbus, specimen each size sewer pipe.
 " " " pieces of curved elbows and branches.
 " " " cistern pipe.
 " " " catch basin.
 " " " stench traps.
- Sortman & Plum, Hamilton, improved ironing table.
 E. C. Chapman, Lacon, Illinois, Chapman's improved chimney or stove pipe thimble and ventilator.
- Reno Bros., Pulaski, Pa., specimen of paint.
 George Scholl, Springfield, bathing apparatus.
 Johnson & Wright, Millburg, polished wooden bowls.
 Fire Kindler Company, Springfield, asbestos fire kindler.
 Columbus Mantle and Grate Company, Columbus, display of marbleized wood.
 Frank Myers, Springfield, bird cage.
 Gebhard Kolb, Springfield, belt fastener.
 Lang & Colver, Wellington, cheese hoop.
 West Liberty Wheel Co., West Liberty, carriage wheel.
 Baker & Brown, Springfield, Welda's patent smoothing iron.
 " " sample card screw drivers.
- Wm. McClelland, Wellington, chess press screw.
 Baker & Brown, Springfield, pannel plow.
 N. S. Thompson, Richmond, Ind., roaster and heater.
 M. B. Cook, Springfield, display of millinery goods.
 Cleveland Non-explosive Lamp Co., Cleveland, non-explosive lamp and fixtures.
 Edwin Bayliss, Massillon, dry earth commode.
 Dennis Holtz, Tiffin, improved bob sled.
 David West, Springfield, set carriage wheels.
 Walker Steitz & Co., Cincinnati, iron water buckets.
 Springfield Malleable and Gray Iron Works, Springfield, castings.
 Maxon & Kelly, Springfield, lifting jack.
 C. A. Meck, Urbana, feather renovator.
 Horace Moore, Bellefontaine, mill brand.
 R. W. Laughlin, Bellecenter, churn power.
 E. M. Hitchcock & Co., Cleveland, ornamental iron fountain.
 Wm. Marot, Springfield, commode ottoman.
 John Zelter, Dayton, rocking meat cutter.
 Hallister & Co., Toledo, diamond baking powders and cream tartar.
 Studebaker Brothers' Manufacturing Co., South Bend, Ind., wagon or carriage hub.
 John Seltzer & Co., Columbus, furniture polish.
 J. W. Clark, Columbus, picket cutter.
 W. L. Breckith, Berea, window frame.
 E. M. Williams, Columbus, iron buggy bodies and seat.
 Rosenculp & Shambaugh, Thornville, dumping car improvement.
 Rosetta Darling, Norwalk, hollow wooden ware.
 Boal, Andrews & Cook, Chicago, Ill., stove pipe thimble and ventilator.
 Williams & Gamwell, Chagrin Falls, pruning tool.
 Benj. Baker, Summerset, Mich., grain measure.
 E. R. Gard, Chicago, Ill., lifting jack.

FOURTH DEPARTMENT.

- Mrs. E. Angsperger, Tiffin, woolen tidy.
 Mrs. C. E. Hills, Delaware, ornamental needle work.
 Mrs. R. Schoenberger, Columbus, embroidered sofa pillow.
 Miss M. Bender, 20 Mile Stand, head dress.
 Mrs. J. C. Wood, Springfield, worked collar.
 Oscar Kleinberger & Co., Springfield, straw hat.
 Miss Nellie Urner, Springfield, variety wax flowers.
 Mrs. L. Spees, Columbus, group wax flowers.
 Maggie Rane, Springfield, wax flowers.
 Mrs. A. Church, Painesville, moss and lichen work.
 Samuel T. Fish, Dayton, bound book.
 John Todd, Springfield, sofa.
 " " lounge.
 " " writing desk.
 Foos & Mulliken, Springfield, display of chairs.
 Excelsior School Furniture Co., Cincinnati, seats and desks for schools.
 Melinda Snyder, Donaldsville, 5 pieces check or plaid flannels.
 Piqua Woolen Mills, Piqua, 10 pieces jeans.
 Miss Mattie Shields, Hillsborough, gents' shirt.
 Miss Mary Little, Yellow Springs, knit bed spread.
 Mrs. E. Mayhew, Uhrichsville, linen sewing thread.
 Mrs. R. Shoenberger, Columbus, woolen shawls.
 Mrs. R. P. Thomas, Springfield, woolen knit shirt.
 Oscar Kleinberger & Co., Springfield, 3 domestic corsets.
 " " 3 imported corsets.
 Mrs. L. Drury, Springfield, chart for cutting garments of all kinds.
 Mrs. George Drury, Springfield, trimmed patterns.
 Mrs. M. S. Gunckle, Dayton, tufted worsted cushion.
 Mrs. J. C. Baxter, Springfield, bible.
 Voorhees, Hayward & Co., Springfield, pew end.
 " " pulpit or church reading desk.
 " " newel post, rail and balustrade.
 " " window frames, sash and blinds.
 Patent Rubber Spring Bed Co., Springfield, spring bed bottom.
 Stella W. Bates, Mechanicsburg, tettering tidy.
 Miss Alice Buckingham, Springfield, cross and wreath of wax work.
 Annie M. Mills, Springfield, worsted quilt.
 Miss H. A. Ohlenfeld, Springfield, case of corsets and hoop skirts.
 Mrs. E. E. Faber, Springfield, display of millinery goods.
 Lide Brown, Mechanicsburg, 2 pair mittens.
 I. M. Hatcher, Springfield, case real lace goods.
 Mrs. E. J. Neer, Urbana, table linen.
 Hattie Neer, Urbana, lady's robe.
 Mrs. H. Break, Fairfield, hearth rug.
 " " toilet cushion.

A. T. Luce, Urbana, lady's robe.
 Mrs. S. C. Luce, Urbana, lady's robe.
 " " lady's dress.
 Harriet Hough, Woodfield, chemise band.
 Mrs. A. Sellers, Washington C. H., feather wreath.
 Mrs. M. H. Clap, Springfield, feather wreath.
 Deerduf, Mellow & Co., Springfield, burial cases, (6 varieties.)
 Miss Mattie Shields, Hillsborough, embroidered skirt.
 Jamison & Nash, Columbus, burial cases.
 J. B. Philips & Co., Springfield, display paper hanging and wall paper.
 Miss E. Angsperger, Tiffin, infant's robe.
 Miss M. Bender, 20 Mile Stand, knit scarf.
 Mrs. E. G. Corry, Xenia, knit sofa pillow.
 A. E. Davis, Columbus, display of millinery.
 Osborn & Kershaw, Columbus, carpets and rugs.
 Jacob Herximer, Chicago, Ill., rein holder.
 Mrs. M. Giesey, Columbus, applique raised worsted embroidery.
 O. Kleinfelter, Springfield, 3 pairs embroidered slippers.
 Mrs. S. C. Luce, Urbana, lady's skirt.
 A. E. Davis, Columbus, infant's bonnet.
 I. M. Hatcher & Co., Springfield, display of ostrich feathers.
 Miss Eva Angsperger, Tiffin, tatting.
 Henrietta Haugh, Morefield, plain needle-work.
 H. Gram, Yellow Springs, crochet pillow case.
 " " card basket.
 Miss Alice Layton, Springfield, crochet toilet satchel.
 L. W. Lapp, Cleveland, walking motion treadle for sewing machine.

FIFTH DEPARTMENT.

Dr. C. P. Andrews, Marengo, Ill., Chicago apple, (new variety of the Siberian class.)
 Mrs. J. L. Barry, Springfield, ornamental cake.
 A. C. Judson, Grand Rapids, hybrid popcorn, (for feeding stock.)
 O. Barrae, North Fairfield, display Irish potatoes.
 S. B. McLane, Xenia, display of jellies, pickles, etc.
 George A. Deitz, Chambersburg, Pa., 1 bushel Genesee wheat.
 " " " Arnold's No. 6 Hybrid wheat.
 Springfield Steam Bakery, Springfield, 3 varieties crackers.
 Wiley Jenkins, Dalton, sorgho molasses.
 L. J. & J. M. Cahoon, North Dover, 6 bunches Rentz's seedling grapes.
 " " " Detroit grapes.
 " " " Telegraph grapes.
 C. Keller, Springfield, Connecticut tobacco.
 John Duke, Springfield, 10 pounds lard.
 Mrs. E. Mayhew, Uhrichsville, cauned whortleberries.
 A. K. Lewis & Co., Covington, Ky., sour mash whisky.
 " " " kettle bitters.

SIXTH DEPARTMENT.

George R. Mumma, Dayton, collection 20 varieties green house plants.

" " " 10 " leaved plants.

Albert Eglinger, Springfield, 12 varieties green house plants.

" " collection of ferns.

J. T. Norris, Springfield, strawberry plants.

Jno. Harford, Springfield, photographic bracket.

John P. Allen, Springfield, case of silver plated ware.

R. Sprague, Springfield, rustic work.

J. Bundy, Springfield, marble engine.

(See pages 7 to 10, of this volume, for the action of the Board on Commended List, and on Protests.)

PEDIGREES OF ANIMALS ON EXHIBITION.

THOROUGHBRED HORSES.

WOODSTOCK.—Got by imported Australian out of Emma Wright (Mollie Jackson's and Laura Farris, dam by imported Margrave;) 2d dam Fanny Wright by Silverheels; 3d dam Aurora by Gov. Llyod's Ving'tun; 4th dam Pandora by Col. Taylor's Grey Diomed; 5th dam (the dam of Edelinus Floretta by Hall's Union;) 6th dam by Leonidas; 7th dam by imported Othello; 8th dam by imported Georges Juniper; 9th dam by imported Norton's Traveler; 10th dam by Tasker's imported Selma by the Godolphin Arabian; 11th dam Large Hartley Mare by his blind horse; 12th dam Flying Wing by Williams Woodstock Arabian; 13th dam by St. Victor's Barb; 14th dam by Whynot (son of Fenwick Barb;) 14th dam Royal Mare.

MAID MARION CHIEF.—Foaled May 25, 1869, owned by O. H. Wood; got by Woodstock; 1st dam Linwood by Clay Trustee; 2d dam by old Old Bertrand; 3d dam by Grey Diomed; 4th dam by Leboo by Cragg's Highflyer; 5th dam by Quicksilver by imported Medley; 6th dam by imported Shark; 7th dam by imported Fearnought; 8th dam by Dismal by Godolphin Arabian; 9th dam by Whitefoot, Lord Godolphin.

LAGONDA.—Chestnut Colt; bred A. J. Alexander, Woodburn farm, Woodford county, Kentucky. Owned by L. B. Sprague, of Springfield, Ohio. Got by imported Australian; 1st dam Maria Innis by imported Yorkshire; 2d dam Ann Innis by American Elipse; 3d dam Miss Obstinate by Sumpter; 4th dam Jenny Slammerkin by Tiger; 5th dam Paragon by imported Buzzard; 6th dam Columbia by Columbus, he by imported Pantaloon out of Lady Northumberland; 7th dam ———, by W. Hampton's Paragon; 8th dam ———, by Figure; 9th dam Maria Slammerkin by imported Wildair; 10th dam imported Cub Mare by Cub; 11th Amaranthus' dam by Second; 12th dam the dam of Leeds, Flash, Top, etc., by Starling; 13th dam ——— by Old Partner; 14th dam ——— by Greyhound; 15th dam ——— by Makeless; 16th dam ——— by Brimmer; 17th dam ——— by Place's White Turk; 19th dam ——— by Dodsworth; 19th dam Layton Barb Mare.

FANNY JOHNSON.—Bay filly; bred by A. J. Alexander, Woodburn Farm, Woodford county, Kentucky. Owned by L. B. Sprague. Foaled April 1, 1869. & t by Asteroid; 1st dam Nora by imported Sovereign; 2d dam Chloe Anderson by Rodolph; 3d dam Belle Anderson by William of Transport; 4th dam Butterfly by Sumpter; 5th dam Maria by imported Buzzard; 6th dam ——— by Dandridge Fearnought; 7th dam ——— by imported Janus.

IDA MAY.—Chestnut filly; bred by A. J. Alexander, Woodburn Farm, Woodford county, Kentucky; the property of L. B. Sprague, Springfield. Foaled April 25th 1870. Got by Planet; 1st dam Charlotte Buford by Lexington; 2d dam Kitty Clark by imported Glencoe; 3d dam Miss Obstinate by Sumpter.

The remainder of the pedigree is the same as that of Lagonda. (See above.)

COL. ELLSWORTH.—Dark bay stallion by Cooper's Stockbridge Chief; dam by Old Bellfounder; grand dam by Ryerson's Bertrand. Owned by Lewis D. Campbell.

LITTLE DOLLEY.—She was by Young Bonnie Scotland; he by imported Bonnie Scotland¹. The dam of Young Bonnie was by Rattler; Grand Dam was owned by Dr. Toland of London, Madison county, Ohio. Little Dolley 1st dam was by the imported Bonnie Scotland; 2d dam by Eclipse; Eclipse stood in Urbana, Champaign county, Ohio. Eclipse was raised by Col. Johnson, of Virginia, from his noted running mare Blueskin; 3d dam by North Star, dam by the running horse Joe Gates, and he by the thoroughbred horse Marlborough. Owned by Adam Calvin, Clark county.

EMILY PEYTON.—Sired by Lexington; 1st dam Sallie Roper by imported Albion; and she own sister to Bill Cheatham; 2d dam by imported Glencoe; and she the dam of the noted horse Berry; 3d dam by imported Leviathan; and she own sister to the famous horse Orhelo; 4th dam by Sir Archy; 5th dam by imported Citizen; 6th dam by the Barb Horse and out of the Barb Mare sent as a present to President Jefferson by the Sultan of Turkey. Owned by O. P. Cheney.

See Bruce's Stud Book, page 355.

RINGMASTER.—Owned by C. M. Poor. Chestnut mare; foaled spring 1861; bred by W. F. Harper, Esq., of Woodford county, Kentucky; by Ringgold dam Minnie Mansfield by imported Glencoe; 2d dam Argentels by Bertrand; 3d dam Allegrents by imported young Truffle; 4th dam imported Pantomine by Phantom; 5th dam by Walton; 6th dam Allegrette by Pegasus; 7th dam Orange Squeezer by Highflyer; 8th dam Mop Squeezer by Matchen; 9th dam by Turner's Sweepstakes; 10th dam by Patriot; 11th dam by Crab; 12th dam by Bay Bolton; 13th dam by Curwen's Bay Barb; 14th dam by Spot; 15th dam by White Legged Lowther Barb; 16th dam old Vintner mare.

PARTISON.—A brown colt, two years old, by the Irish Chief; Irish Chief, son of King Tom, King Tom out of Lady Overton by Morning Light, his dam the Black Swan. Irish Chief took the first prize at the great Horse Show in London in 1863.

TIME.—A bay colt, two years old, out of Tomahawk; Tomahawk by Historian, Historian by Empire, his dam the North Star. The sire of Tomahawk won the great Derby of four hundred pounds, 1838.

JULIAN.—Bay mare, four years old, sired by Combuscan; Combuscan by Trumpet, Trumpet by Student; dam Miss Queen.

Partisan, Time and Julian, owned by Stephen F. Deems, Columbus, Ohio.

THOROUGHBRED CATTLE.

SHORTHORNS.

RED JACKET, 6095. Red. Bred by H. H. Hankins, Reesville, Clinton county, Ohio. Calved March 22, 1865. By Duke of Highland, 5570. 1st dam Bertha 2d by Crusade, 2678; 2d dam Bertha by imp. Sheffelder, 9314; 3d dam Bertha by Highland Experiment, 79; 4th dam 3d by Comet Halley, (1855); 5th dam imp. Bertha by son of Hero, (1110); 6th dam Flora by Nero, (1265); 7th dam Tulip by Leopold, (372); 8th dam by Charge's Gray Bull, (872).

RED JACKET 5TH. Red. Bred by H. H. Hankins, Reesville, Clinton county, Ohio. Calved November 18, 1839. By Red Jacket, 6095. 1st dam Emma 3d by Thornbury, 3494; 2d dam Emma 2d by imp. Warrior, 1076; 3d dam imp. Emma by Promoter, (10659); 4th dam by Liberator, (7141); 5th dam by Belshazzar, (3125); 6th dam by Norfolk (2377); 7th dam by Baronet, (774); 8th dam Rosette by Meteor (432); 9th dam Reesini by Marshal Beresford, (415) 10th dam by Windsor, (698); 11th dam by son of Patriot (486).

RED JACKET 6TH. Red. Bred by H. H. Hankins, Reesville, Clinton county, Ohio. Calved January 23, 1870. By Red Jacket 6095. 1st dam Emma 14th by Red Jacket, 6095; 2d dam Emma 12th by Duke of Highland, 5570; 3d dam Emma 5th by imp. Wellington, 1087; 4th dam Emma 3d by imp. Sheffielder, 964; 5th dam imp. Young Emma by Sailor, (9592); 6th dam Emma by Paley, (7310); 7th dam by Bulmer, (1760); 8th dam by Son of Fairfax, (1023); 9th dam by Shylock, (2622); 10th dam by Whitworth, 1584.

EMMA 14TH. Red. Bred by H. H. Hankins, Reesville, Clinton county, Ohio. Calved May 13, 1868. By Red Jacket 6095. 1st dam Emma 12th by Duke of Highland, 5570; 2d dam Emma 5th by imp. Wellington, 1087; 3d dam Emma 3d by imp. Sheffielder, 9614; 4th dam imp. Young Emma by Sailor (9592); 5th dam Emma by Paley, (7310); 6th dam by Bulmer, (1760); 7th dam by son of Fairfax, (1023); 8th dam by Shylock, (2622); 9th dam by Whitworth, (1584); 10th dam by Candor, (107).

EMMA 16TH. Red. Bred by H. H. Hankins. Calved November 3, 1868. By Red Jacket, 6095. 1st dam Emma 3d by Thornberry 2d, 3494; 2d dam Emma 2d by imp. Warrior, 1076; 3d dam imp. Emma by Promoter (10658); 4th dam by Liberator, (7141); 5th dam by Belshazzar, (3125); 6th dam by Norfolk, (2377); 7th dam by Baronet, (774); 8th dam Rosette by Meteor, (432); 9th dam Rossini by Marshal Beresford, (415); 10th dam by Windsor, (698); 11th dam by Son of Patriot,

GEN. SHERMAN. Roan. Bred by H. H. Hankins Reesville, Clinton county, Ohio. Calved November 8, 1868. By Red Jacket, 6095. 1st dam Favorite 3d by Snowball, 7282; 2d dam Favorite 2d by imp. Czar, 395; 3d dam Favorite by Othello, 792; 4th dam Bracillia by Neptune, 744; 5th dam Lucinda by Prince Albert, 2070; 6th dam Martha by St. Albion, 157; 7th dam Joppa by Sultan, 163; 8th dam Beauty by Prince Regent, 877; 9th dam Beauty by Lafayette, 1755; 10th dam imp. Durham Cow.

RED JANNY. Red. Bred by James R. Milla, Reesville, Clinton county, Ohio. Calved October 20, 1868. By Red Jacket, 6095. 1st dam Maggie by Crusade, 2678; 2d dam Jenny Lind by Neptune, 744; 3d dam Helen by Prince Albert, 2078; 4th dam Juliet by St. Albion, 157; 5th dam Duchess of Stokes by Duke of York, (1971); 6th dam Joppa by Sultan, 163; 7th dam Beauty by Prince Regent, 877; 8th dam Beauty by Lafayette, 1755; 9th dam imp. Durham Cow.

9TH GREAT REPUBLIC, 8278. Red. Bred by and the property of John Martin, Union Village, Warren county Ohio. Calved September, 5, 1864. Got by 1st Great Republic, 6822; out of Mary Washington by imp. Challenger, 324; Sarah Gandy by Wellington, 2366; Gandy by Prince Albert 2d, 857; Catharine Turley by Bulmer, (1760); Young Phyllis by Fairfax, (1023); Phyllis by Harpham, (1098); by Percy, (1312); by Delicacy, 346; by Expectation, (247); by Magnum Bonum, (2882); by Chapman's bull, (122); by Ralph Grimston's bull, (282); by Son of Dalton Duke, (188). (A. H. B., Vol. IX., p. 199.)

Live weight 2540 pounds; in fair serving condition.

26TH GREAT REPUBLIC, 8295. Red. Bred by and the property of John Martin, Union Village, Warren county, Ohio. Calved June 28, 1869. Got by 1st Great Republic, 6822; out of 65th Belle Republic by Duke of Airdrie, 2743; Medora 2d by Orantes 2d, 1966; Medora by D'Otley, 432; Lucilla by Romulus, 925; Helen by Bertram 2d, (3144); Ruby 2d by Bertram, (1716); Ruby by Young Sir Dimple, (971); Daisy Wellington, (678); Beauty by Duke (224); Lucy by Young Comet, (905); by James Brown's Red Bull, (97.) (A. H. B., Vol. IX., p. 202.)

Live weight 1700 pounds; 2 years old; in fair serving condition.

DAIRY DUKE.* Rich Roan. Bred by William Warfield, Lexington, the property of John Martin Union Village, Warren county, Ohio. Calved April 25, 1867. Got by Noble, 5997; out of Maggie Prewett by Clarendon, 2634; Margaret by imp. Fortunatus, 1564; Callie Prewett by Wellington 7th, 2370; Miss Nannie by Prince Albert 2d, 857; Red Beauty by John Randolph, 603; Hannah Moore by Goldfinder, (2066); imp. Young Mary by Jupiter, (2169); Mary by Sallendine, (1417); Lucy by Meek's bull, (2288.)

Live weight, 2410 pounds; 5 years old; in fair serving condition.

DEXTER, 9742. Red Roan. Bred by A. J. Barnes, Bloomington, Ill., the property of Cyrus Jones, Towanda, McLean county, Ill. Calved July 23, 1869. Got by Dan Rice, 9723; out of Trinket by Utah, 5238; Louisiana 2d by Baron Martin 4th, 3659; Louisiana by Pioneer, 820; Lady 2d by Beppo, 265; Lady 1st by Comet, 355; Flower by Oliver, (2387); Beauty by Duroc, 454; Lady Munday by Sam Martin, (2599); imp. Mrs. Motte by Adam, (717). (Vol. X. A. H. B., p. 97.)

SIR FREDERICK, 9107. Red and white. Bred by James Hall, Bourbon county, Kentucky. The property of John Ross and G. H. Wright, Crawford county, Ohio. Calved March 22, 1869. Got by Princeton, 4285, out of Sarah Rice by Pearl, 2012; Floss by imported Yorkshire Maynard, 2401 (14043); Floretta by Elegant, (12828); Flower by Ralph, (4362); imported Pomona by Bedford, Jr., (1701); Mulberry by Isaac, (1129); by Whitworth, (1584); by White Comet, (1582; by a son of Mr. Charges Kitt, (2179).—A. H. B., Vol. IX., 362.

MYRTLE PRINCESS. Red. Bred by and bought of D. McMillen, Xenia, Ohio. Calved March 8, 1870. Owned by C. Hook. Got by Plantagenet, 6031; dam Myrtle by imp. Starlight, (12146) 1003; dam Lady Watson by imp. Billy Harrison, 263; dam Lady Jane by Whittington, (12299); dam Lady Brown by Lord Lowther, (7164); dam Eliza by Pantan Favorite, (4646); dam Miss Eliza by a son of Grazier, (1085); dam Elizabeth by a son of Grazier, (1085); dam Bessy by Vulcan, (8746); dam Bessy by Quaker, (1349); dam Betty by Stonehill's bull by Colling's son of Favorite, (252).

SHAWNEE LAD. Red. Bred by Charles Hook, Xenia, Ohio. Calved March 23, 1871. Got by Royal Lad, 9032; dam Jennie Mills by Son of Booth, (3689); dam imp. Louisa by Crusade, (7938); dam Miss Shaftoe by Capt. Shaftoe, (6833); dam Madcap by William, (2340); dam Reform by Mercury, (2310); dam Liberty by Ivanhoe, (1131); dam Tiffany by Regent, (544); dam Canbrie by Lawnsleeves, (365); dam — by Lawnsleeves, (365.)

SHAWNEE BELLE. Roan. Bred by and the property of C. Hook, Xenia, Ohio. Calved October 20, 1869. Got by Plantagenet, (6031); dam Lucy by Young Marquis, (3603); dam Strawberry by Wiseman, (5267); dam Dairymaid by Hantboy, (10305); dam Kitchenmaid by Irishman, (5446); dam Maiden by Oliver, (4609); dam Maid by William, (5661); dam The Maid by Pilot, (496).

ROYAL LAD. Red and white. Bred by D. McMillan, Xenia, Ohio, and now the property of C. Hook. Calved October 20, 1868. Got by Plantagenet, (6031); dam Oxford Duchess by 3d Grand Duke of Oxford, (4860); dam Duchess of Oakland by Duke of Thorndale, (2787); dam imp. Prizeflower by Prince Charlie, (13501); dam Lily by Fitz

*The pedigree of Dairy Duke, 11611, in A. H. B. Vol. XI, p. 105, is as follows: Dairy Duke. Roan. Bred by Lewis Connor, Boone county, Ky., the property of Peter Boyd, Union Village, Warren county Ohio. Calved April 25, 1866. Got by Noble, 5997; out of Maggie Prewett by Clarendon, 2634, etc., etc.

† Son of Booth got by Booth, (3689); dam imp. Louisa by Crusade, (7938). See above.

Leonard, (7010); dam Quartz by Granite, (7047); dam Beauty by The White Bull, (5648); dam Young Broadhook by Young Lady Kirk, (4173); dam — by Albion, (731); dam Europa by Sirius, (598); dam Shorttail by Wellington, (679); dam Honeysuckle by Sultan, (631); dam Jane by Signoir, (588).

DEVONS.

HAMLIN. Calved May 20, 1869. Bred by J. J. Scarff, of Clarke Co., Ohio. Sire, Bounty No. 15; grand-sire Prim, imp. No. 87; dam, Eliza; grand-dam, a cow imported by the Stock Association of Park Co., Indiana.

GRANT. Calved February 1, 1868. Bred and owned by J. J. Scarff, of Clarke Co., Ohio, and now the property of Jesse Mead of Bowlusville, Ohio. Sired by Bounty No. 15; grand-sire, Priam No. 87; dam, Maggie; grand-dam, Pegg, both of imported stock.

GEN. GRANT. Calved July 21, 1868. Bred by J. J. Scarff, of Clarke Co., Ohio, owned by Geo. Frantz. Sire, Morton; grand-sire, Priam No. 87; dam, Eliza; grand-dam, Jessie, imported by Stock Company of Park Co., Indiana.

MINISTER SHERMAN. Calved June 8, 1870. Bred and owned by George Frantz, of Springfield, Ohio. Sire, Bounty No. 15; grand-sire, Priam No. 87; dam, Minnie; grand-dam, Dot.

MINNIE. Calved April 1, 1866. Bred by J. J. Scarff, of Clarke Co., Ohio, owned by Geo. Frantz. Sire, Morton 2d; grand-sire, Frank Quartly No. 39; dam, Dot; grand-dam, Fannie.

MAYFLOWER. Calved July 25, 1868. Bred by J. J. Scarff, of Clarke Co., Ohio, and now the property of Jesse Mead, of Bowlusville, Ohio. Sired by Morton, grand-sire, Priam, No. 87; dam, Dot; grand-dam, Rose, by imported Anchises, (140.)

ALDERNEYS.

NAPOLEON. Bull. Owned by John S. Mason, of Springfield, Ohio. Sired by thoroughbred bull, Robert Lee 2d, owned by Mr. Devries, of Maryland; grand-sire, Robert Lee 1st; dam, Countess, owned by Mr. Remicker, of Baltimore; grand-dam imported by Mr. Painter, of Hartford, Conn.

Napoleon was calved in June, 1868. Color, dun and white; was raised by Mr. Remicker, of Baltimore.

EUGENIA. Cow. Owned by Mrs. Martha D. McGrew, of Springfield Ohio. Dam, Emily, thoroughbred Jersey, from private stock farm of Mr. Bacon, near Philadelphia; her sire was a thoroughbred Jersey bull, owned by Mr. Price, near Philadelphia. She was calved March, 1867. She was purchased of W. A. Judkins, of Smithfield, Ohio, by him from Col. C. H. Gist, of Philadelphia, who obtained her direct from the gentleman who raised her.

STATEMENT OF EXHIBITERS.

IRWIN STATION, UNION COUNTY,
DECEMBER 27, 1871.

This is to certify that I husked and measured off of five acres of ground, for Charles McMullan, four hundred and eighty-two bushels and sixty pounds, or an average of ninety-six bushels and forty pounds to the acre. The corn was sound and dry.

WM. B. HERRIOTT.

The undersigned, having measured the above field, finds it contains but five acres.

C. McMULLAN,
WM. B. HERRIOTT.

The kind of corn raised is the White Cap; was planted on black soil about the fifth of May, with a Dickey drill, in rows about three and a half feet apart; broke the ground about eight inches deep, harrowed once, rolled once, then planted. The tending was harrowing it once, just as the corn was coming up, and plowed three times with a double shovel plow. No manure used; and is the fifth crop of corn in succession on the land.

C. McMULLAN.

State of Ohio, Union County, ss :

Personally appeared before me, on the 30th day of December, 1871, W. B. Herriott and C. McMullan, who, being duly sworn, do say that the above statement, signed by them, is true, to the best of their knowledge and belief.

HARVEY BURNHAM, J. P.

COST OF RAISING THE ABOVE FIVE ACRES.

To three days plowing ground, man and team at \$3 a day.....	\$9 00
To one-half day harrowing " " "	1 50
To one-half day rolling " " "	1 50
To two-thirds day planting, man and horse.....	1 25
To harrowing as it came up, man and team.....	1 50
To five days plowing with double shovel, at \$1.75 a day.....	8 75
To husking and cribbing 482 bushels, at 6 cents per bushel.....	28 92
	<hr/> \$52 42
Deduct cribbing.....	28 92
	<hr/>
Leaves the raising of the corn.....	\$23 50

C. McMULLAN.

To the Honorable Members of the Ohio State Board of Agriculture :

This is to certify that I produced, from one (1) acre of ground, three hundred and forty-seven (347) bushels of potatoes of the "Peerless" and "Shaker Russet" variety; and the following is a true and correct statement of the manner of cultivation, etc.:

The soil is of a black loam and sand, thoroughly underdrained. The field was an old pasture land until the spring of 1870, when it was plowed and planted to corn. The corn was cut and drawn off in the fall. In the spring of 1871 I drew twenty-seven (27) loads of cow manure, each load containing about twenty-five (25) bushels. This was spread evenly over one acre. The field was plowed about eight (8) inches deep, with one of T. S. Merrill's Maumee steel plows, and thoroughly harrowed twice in a place with a square harrow, then marked out with a one-horse steel plow (4) four inches deep, three feet apart. The potatoes were cut from one to two eyes in a piece, and dropped crosswise in the furrows, three feet apart, one piece in a hill, leaving the rows three feet each way. Before covering I dropped one handful on each piece of leached ashes, then covered with a hoe three inches deep. The potatoes were planted on the 11th day of May, using five and one-half (5½) bushels of seed—four (4) bushels of "Peerless" and one and one-half (1½) of "Shaker Russets" variety. On the 12th day of June I cultivated them with a five-tooth cultivator, twice in a row each way, and hoed. Again I cultivated with a "Hyde" three-tooth cultivator, once in a row each way, on the 26th of June, and "hilled" them with a hoe a very little. No other cultivation.

Dug them on the 23d and 24th of October, with following result: Two hundred and eighty-seven (287) bushels of "Peerless," each bushel, by measure, weighing sixty-two (62) pounds; and sixty-seven (67) bushels of Shaker Russets, each bushel, by measure weighing sixty (60) pounds; the whole amount being three hundred and forty-seven (347) bushels of good merchantable potatoes, each bushel having been accurately measured in a bushel measure.

STATEMENT OF EXPENSE.

27 loads of manure delivered on ground, at 40 cents per load.....	\$10 80
Plowing, harrowing, etc., man and team.....	3 00
4 men one-half day planting.....	2 00
2 days cultivating and hoeing.....	4 00
3 men two days digging each.....	6 00
2 days, man and team, drawing to market.....	6 00
4 bushels of "Peerless" for seed, at \$2 per bushel.....	8 00
1½ bushels of "Shaker Russets" for seed, at \$1 per bushel.....	1 50
Total	\$41 30

Erie County, Ohio, ss :

C. W. Taylor, being duly sworn, says that he raised a crop of potatoes, the past season, upon the land measured by Frank A. Greene, and the quantity of potatoes raised thereon was three hundred and forty-seven (347) bushels, and no more, measured in a sealed bushel, and that the statements in regard to the manner of cultivation, etc., are correct, to the best of his knowledge.

C. W. TAYLOR.

Sworn before me, this 23d day of December, 1871.

JOHN MACKAY, Notary Public.

State of Ohio, Erie County, ss :

Frank A. Greene, being duly sworn, says he accurately measured the land upon which C. W. Taylor raised a crop of potatoes the past season, and the quantity of land is one (1) acre, and no more.

FRANK A. GREENE.

Sworn to before me, this 25th day of December, 1871.

JOHN MACKEY, Notary Public.

State of Ohio, Erie County, ss :

Albert Smith, being duly sworn, says he accurately measured a crop of potatoes raised the past season by C. W. Taylor on one (1) acre of land, measured by Frank A. Greene and there were raised on said land three hundred and forty-seven (347) bushels.

His
ALBERT X SMITH.
mark.

Sworn to before me, this 23d day of December, 1871.

JOHN MACKEY, Notary Public.

FLOUR.

First—Two barrels of flour made of white wheat, taken out of a lot of 135 barrels, made from 601 27-63 bushels wheat, as received from the farmers, without re-cleaning or dock for dirt before weighing, making 126 barrels and 44 pounds, first grade, and 8 barrels and 152 pounds, second grade, or 93½ per cent. first grade and 6½ per cent. second grade. First grade takes 4 46-60 bushels to the barrel, and both grades took 4 26½-60 bushels wheat.

Second—Two barrels made of red Mediterranean wheat, taken out of a lot of 135½ barrels made from 600 bushels wheat as received from the farmers without re-cleaning or dock for dirt, which made a yield of 123 first grade and 12½ second grade, taking 4 62½-60 bushels for first grade and 3 25½-60 bushels for second grade, and gave 91 per cent. first grade and 9 per cent. second grade. No third grade made with either lot, but same thrown with middlings.

WARDER & BARNETT.

SEPTEMBER 26, 1871.

ROCK POINT MILLS, SPRINGFIELD, O.,
September 23, 1871.

To the Secretary of the State Board of Agriculture :

SIR :—I hereby certify that in offering the articles I propose to exhibit for competition, classified under Entry Book No. 46, viz : 1 barrel red wheat flour, made from four bushels and eleven pounds of wheat, which is called the red Mediterranean wheat, I have complied with the requirements of the Board, and further state that this wheat makes the best and wholesomest bread of any wheat I ever ground. It makes the best body on flour. Flour that has not a good body will not make good bread, if it looks as white as snow. Flour that has a kind of a yellow cast is the richest that is made. Never buy white wheat flour, when you can get flour of a yellow shade, for good bread. I have been milling for thirty-five years.

GEORGE GRISSE.

CHEESE MAKING.

BROOKLYN, OHIO, September 27, 1871.

- 1st. The best breed of cows are Native, and grade crossed with Shorthorn.
- 2d. I consider that white clover and timothy makes the best pasture ; it produces the most and best milk for cheese or butter.
- 3d. Long continued pasturing improves the land for dairying.
- 4th. Dairymen, in Ohio, can pay \$45 dollars per acre—though this depends much on the soil—say take sand and loam, with a slight rolling, so the surface-water can run off, produces the sweetest pasture, and produces the best flavored cheese and butter ; and by all means select a farm that has a plenty of good running water.
- 5th. A curing room should be 70 degrees. This cures the cheese the best. Too low a temperature has a tendency to sour and too high a temperature has a tendency to make the oil run from the cheese. This injures the cheese as bad as it would to take the same amount of cream from the milk.
- 6th. The cheese exhibited at this Fair was made in July and the fore part of August, and made from one day's milking, and from 65 cows. There was no cream added to the milk.
- 7th. To preserve rennet, take the rennet, turn it and empty, turn back, fill with salt, lay on a plate until dry.
- 8th. In preparing for use, take, say three rennets, fill a crock with one and one-half gallons water, let them soak two days ; take out the rennet, strain the liquor, and it is fit for use. Keep repeating this process until the strength is exhausted.
- 9th. Press the cheese with a wrought iron screw, 1½ inches, use a lever 3 feet long and ¾ round bar, turn down as hard as the lever will bear ; let the cheese stand from one-half to one hour, then loosen the screw, turn down the bandage, and then turn down the screw, snug, let it stand from twenty to twenty-two hours, then take out and carry to the curing room, oil the cheese with oil made from whey butter ; turn the cheese every day until they are nearly cured ; after this, turn occasionally and rub as before until they are thoroughly cured.

C. S. GATES.

WELLINGTON, OHIO, Sept. 22, 1871.

To the Officers of the Ohio State Board of Agriculture :

- 1st. The best breed of cows for dairying are the Native crossed with Durham. That makes a good, fair looking cow, and a good milker.
- 2d. I consider that herd-grass or timothy mixed with white clover, makes the best pasture. It produces a large quantity and a good quality of milk for butter or cheese.
- 3d. Long continued pasturage improves the land for dairying or any other crop you wish to raise.
- 4th. Dairymen in Ohio can pay from \$40 to \$50 per acre, say \$45—this depends much on the soil. A farm is worth more with a good, rich soil, loam and sand, with slight rolling, so the surface-water will run off. Land of this description bears good, sweet feed. It is much better than wild grass, mixed, as it will be, on very flat land ; and, in choosing, by all means select a farm that has a plenty of good spring and running brook water for your stock.
- 5th. I would say that a curing room should be at the temperature of 70 degrees. Cheese will ferment and go through the curing process much quicker than at a higher or lower temperature. If too cool it has a tendency to sour the cheese, and if too hot it

melts or causes the oil to run, and that takes the sweetness from the cheese as much as it would to take the cream from the milk.

6th. The cheese exhibited at this Fair was made at different times, from the first of July to the middle of August, 1871. Number of cows, 70. Cheese made from one day's milking. There was no addition of cream.

7th. To preserve rennet, after the rennet is taken from the calf, turn it inside out, empty and scrape, then turn back, fill with salt, lay on a plate until dry.

8th. In preparing for use, take three rennets, put them in a crock, add one and one-half gallons water, let them soak two days, then strain the liquor and it is ready for use. Then take the rennet out, put it in another crock, add one and one-half gallons water, let it stand and strain as before. Keep repeating the same until the strength is gone, then commence on new rennet.

9th. Press the cheese with a common wrought-iron screw, $1\frac{1}{2}$ inch, use a lever of $\frac{3}{4}$ round iron, and three feet long, turn down snug, let the cheese stand three-fourths of an hour, then take out and turn down the bandage, put it back and press 22 hours. Then take the cheese out, take it to the curing room, oil them over with whey butter, turn them twice a day, rub both sides with the hand. Follow this up until the cheese is well cured, after this turn them occasionally and rub as before.

G. H. GATES.

Sept. 26th, 1872.

This cheese was made in the months of June, July and August, and from the milkings of 30 cows. No. of milkings, 2; no addition of cream. Amount of pressure not known. Cheese kept in an ordinary curing room. Best breed of cows for dairy purposes—Short-horns and natives. Clover and timothy. Proper temperature for curd, 80° .

PHILIP COE.

BUTTER MAKING.

Milk five cows; strain in stone crocks. Save the cream from Thursday till Saturday; churned in an old-fashioned churn. Pasture on clover and timothy. Butter salted with common table salt.

Packed in May.—Milk seven cows; strained in stone vessels, and churned in a dasher churn. Pasture cows on clover. Salted the butter with table salt; worked well, to free the milk from the butter. Then to fifty weight, add $\frac{1}{4}$ lb. loaf sugar and $\frac{1}{4}$ oz. saltpeter. Pack in new stone jars.

JACOB CONKLYN.

This butter was made between the 20th and 25th of September, 1871. No. of cows, 6; fed nothing but grass. Milk kept in gallon stone crocks, in a cellar. Churned by hand, in a Union churn. Butter freed from milk with a hand ladle and wooden bowl; $\frac{1}{4}$ lb. of fine table salt, no saltpeter, and 2 oz. of white sugar.

MARY ANN MEAD.

This 50 pounds of butter was made from the milk of five cows, from the 20th of August to the 15th of September, 1871. The cows had no other feed but grass. The salt used was common dairy salt. There was neither sugar, saltpeter, nor any other substance used except salt, one and one-fourth ounces of salt to one pound of butter.

MRS. A. CHURCH.

Twenty-five pounds of butter, made in the month of June. Number of cows milked, 3. No food given them except grass (timothy and clover, mixed). Milk strained in one gallon pails. It was kept in a cool cellar twenty-four hours before skimming. Davie's Self-adjusting Patent Churn used for churning, and also for freeing the butter from the milk. The quantity of salt used, about 1 lb. of salt to 8 lbs. of butter. The best quality of Lake salt used for salting; no other substance employed.

W. H. COVAULT.

Ten pounds of butter, made from two cows, in September, 1871. The milk was put into stone crocks, in the cellar, and the cream taken off every twenty-four hours and put into a cream crock, and churned every forty-eight hours, with a common dash churn. The butter was taken out of the churn with a common butter ladle, into a bowl, and the milk worked out with the before-mentioned ladle by hand, and then salted with common salt to suit the taste. Nothing else put in but the salt, and it is worked in with the ladle, and while working, the salt in it forces the milk out. The cows had nothing but common pasture on the farm, and salted twice a week.

Twenty-five pounds of butter, made in May, from two cows. Had nothing but common pasture on the farm. The milk was put in stone crocks, in the cellar, skimmed every twenty-four hours, and churned every forty-eight hours, in a common dash churn, and taken from the churn with a butter ladle into a bowl, and the milk worked out and salted, to suit the taste, with common salt, with a table spoonful of pulverized sugar to every 5 lbs. of butter, and then packed in a stone jar; fit a linen towel over the butter, cover it with two inches of common salt, and keep it in the cellar.

ELIZA P. MOREHOUSE.

This butter was made commencing about the middle of August up to the 20th of September. The number of cows is four that I milk; they have no other food but woods, grass and salt.

My method of making butter is to keep the crocks sweet. I skim the milk when the cream is thick, not letting the crocks sour; then I wash them with scalding water and rinse with boiling water, and set them out to air. The cream is left to stand until it is in the right state for churning, then it is put into the Union churn, and when it is churned, I scald the butter bowl, take the butter out and wash it, and add 1 lb. of salt to 8 lbs. of butter—and no other substance is added—then the butter is dressed three or four times and packed in sweet crocks; the salt used is common river salt.

I never allow the milk to stand in my churn nor go unwashed.

MRS. GEO. W. MITCHELL.

Butter made in June, from the milk of six cows, strained in stone crocks, and churned in a dasher churn. Was washed in clear, cold water, worked well to free it from the milk, then salted with common table salt and packed in new stone jars.

JACOB CONKLYN.

Twenty-five pounds of butter, from two cows, put up the 1st of June. Churned in a dasher churn, and salted with table salt to suit the taste; no saltpeter or other substance used, and nothing but red clover pasture for cows.

MRS. N. L. ROBERTS.

Ten pounds of butter, made from four cows, grazing on timothy and clover. The milk

was kept in fresh well water; took twenty minutes to churn; washed through two waters and worked till free from milk; 4 oz. salt.

Mrs. C. L. HIESTAND.

One roll fresh butter, 10 lbs., made Sept. 23; one firkin fresh butter, 10 lbs., made Sept. 19; one lot, 25 lbs., made first week in May; one lot, 50 lbs., made second week in April. No. cows milked, 15.

No food but grass; milk kept in spring-house; old-fashioned churn used. Butter freed from milk by hand; nothing used, not even water. Salt, best Zanesville, No. 1.

For packing, 5 lbs. salt, 2 lbs. loaf sugar, 2 oz. saltpeter, to 100 lbs. butter in rolls, 5 lbs. each, water sufficient to make brine; butter must be kept under brine, *invariably*.

Sept. 25th, 1871.

Mrs. GEORGE WOOD.

REPORT OF THE COMMITTEE—HOW TO MAKE BUTTER.

TO BEGIN AT THE BEGINNING.

Butter is the fatty portion of milk. It is produced from the milk of various animals, but chiefly from the milk of the cow. From the latter source is produced the butter of commerce, and it is of this kind only that we shall speak.

The quantity and quality of butter is different in the milk of the different species of animals, or different animals of the same species, and of the same animal under different circumstances.

The circumstances which affect the amount of milk and butter which different animals produce are, to a very considerable extent, under the control of the skillful dairyman. Cows carefully bred for that purpose through several successive generations are much more uniformly good milkers and good butter producers than those not bred. That occasionally an exceptional case occurs, does not change the rule; it is only an evidence that the care in weeding out defects has not been persisted in to the end. The lacteal organs are also susceptible of cultivation in individual animals, and may be much impaired by neglect or improper treatment.

The average annual product of *good* cows, in fair sired herds, in *good* dairy districts, is about two hundreds pounds of butter. The amount of milk required to produce a pound of butter ranges from eight to more than twenty quarts, indicating a very great field for intelligent enterprise in breeding up the standard of excellence in the cows, in their feeding and treatment, or in some or all of the processes of manufacture. It is a remarkable fact that quantity and quality almost invariably go hand in hand in this matter, and those animals which produce the best butter also produce the most. Nor is this circumstance to be overlooked by him who would be a successful butter-maker. The most vital principles are involved, and they demand the most earnest attention.

WHAT AND HOW TO FEED.

Rich feed, in abundance, is absolutely essential to successful butter making. A certain amount of food is required to support the animal, and if only that quantity is given, it is idle to expect any return in milk. A certain other amount goes to the production of milk, and up to a certain point in every animal the production of quantity takes precedence of quality. If, now, the cow can be induced to eat, and will assimilate a largely increased quantity of good food, the *quality* of the milk is very greatly improved, and while the amount of butter is increased, its quality is also improved.

A tendency to lay on fat under high feeding is generally thought objectionable in cows for dairy purposes. We do not, however, view it in just that light. A very strong tendency in that direction, without any corresponding tendency to an increase of milk and butter, would, of course, be objectionable. The fat, stored away, is the animal's balance wheel. A cold, stormy day, or any slight interruption in the supply of food, affects the butter production in the case of a cow in low condition, and if it be continued, it is presently manifest in the decrease in the quantity of the milk, and lastly in the condition of the animal.

It is well known that winter butter is almost always much inferior to summer. This is a natural result of the consumption of the oleine or liquid fat of the butter to keep up the animal heat, and if we would counteract this effect and keep up the quality of the product, we must increase the supply of respiratory food.

Whatever tends to the production of fat or heat, tends to the production of butter, and whatever means may be employed to lessen its waste, such as warming the feed and water, and the stables, tends to the increase of butter.

Cows, in pastures with an abundant supply of mixed grasses, free from foul weeds, and with plenty of good clean water to drink, without having to travel far for it, or to suck it up from a foul mud-hole, with an occasional shade in which to lie and chew their cud at their leisure, and a shed or stable with a well filled rack to which they can resort in stormy weather, are in about as good a situation to produce much and very choice butter as they can well be, and the nearer to this condition they can be kept, the better. Hence, if a drought prevails, or if for any other cause it is thought best to supplement the feed, let it be done in a manner, if possible, that they may feel and believe that they are still feeding on their delicious pasture grass. It is not good policy to force upon them as food dry, woody stalks of any kind, nor yet those half-grown and uncured watery articles known as green fodder. Soiling crops fed green are, for the most part, good for the production of a large quantity of milk, but not of a large quantity or good quality of butter. If cured, or partially cured, they are a very great help in a short season. Early cut and well cured meadow hay, of good quality, and well cured corn fodder, cut fine, flavored with pulped roots, and seasoned with a liberal supply of corn meal, are very good substitutes for pasture grass for summer and winter feeding. But whatever the quality, the quantity should never be stinted.

The driving of cows considerable distances causes waste of the animal tissues, which must be made up by a draft on the caseine of the milk, and upon the butter indirectly at least; while if driven beyond their slowest gate, the direct waste by increased respiration is considerably increased. So cows that are obliged to keep upon their feet most of the day, traveling about in search of food, secrete less milk, and of a poorer quality, than those that fill themselves with less labor and more quickly, and retire to some shady nook to digest their food at leisure.

TOO MUCH STOCK FOR THE FEED.

Keeping too much stock for the supply of feed is a very common thing among dairymen. Make shifts of every kind, in feed, in stock, in implements, in help, and in the product, are all unworthy the good dairyman. If his means will not permit him to keep twenty cows, and keep them well, and work up their milk in the very best manner into the very best product, and to sell it to the best paying customers, it is better to keep but ten, till his means will permit him to keep more. It is by no means an uncommon occurrence for men to keep so many cows that their profit is infinitesimal; when half or two-thirds as many might, on the same feed, have paid a fair profit on the investment and labor.

HAVE A REGULAR SYSTEM.

All the operations of dairying, including feeding and milking, should be done upon some regular system. The same person should, as far as practicable, do all the feeding, and at regular intervals; and so of the milking. In every thing pertaining to the business the most scrupulous cleanliness must be practiced. All offensive odors, such as arise from carrion or other decaying substances, animal or vegetable, in the pasture or stable, or in or around any of the dairy buildings: and all kitchen or wash-room smells, or any of the germs of putrefaction which have their origin and growth in all sorts of out of the way places where there is the least deposit of any putrescible matter, if no worse than spilled milk, are sure to leave their impress on the product of the milk. New milk, cream and butter are well known to be powerful absorbents, and it is proved, past a doubt, that milk is affected by these offensive matters while yet in the udder, probably by the inhalation of the cow.

Want of space compels us to pass over the important subject of dairy buildings, with the single remark that the temperature and ventilation must be under the control of the operator, and it is idle to hope for uniform success without these conditions.

PRE-REQUISITES.

We sum up the *pre-requisites* to successful butter-making as follows: good cows, good feed, pure water, pure air in doors and out—which implies buildings with facilities for warming and ventilation—proper apparatus, care in every thing, the most scrupulous cleanliness, and above and beyond, and including all, an honest and fixed determination to excel, to give to the customer not only “his money’s worth,” but the utmost possible gratification. Always try to “make the best.”

CHEMICAL ANALYSES.

For a number of years the Experimental Station of the Royal Agricultural Academy of Sweden, in Stockholm, has been occupied with chemical investigations upon milk, its composition and alteration, and the products obtained from it in the making of butter and cheese. We here give the results of some of these researches, which have been ably conducted by Professor Alexander Muller, and his assistant, Dr. Eisenstuck.* Many of the statements are indeed not new to the dairyman, but they have this value, that they are the results of experience rendered positive and incontrovertible by exact experiment, with the aid of chemical analysis. In common practice and observation many of the conditions needful for arriving at the truth are wanting, and the circumstances of the experiment are vaguely understood and fluctuating. Hence the results, obtained by a skilled and precise experimenter, fully posted in the practice of dairying, and equipped with all the methods and instruments of experimental science, are peculiarly valuable.

Analysis were made of the mixed milk of fifteen cows (five Ayrshire, five Pembroke-shire, and five Swedish cows), which were highly fed and milked at 6½—7½ A. M., and 5½—6½ P. M. These analyses, extending throughout a whole year, gave the following average result:

One hundred parts of milk gave—

Dry matter.....	12.81
Water	87.19
	<hr/> 100.00

* See Ohio Agricultural Report for 1870, page 506.

The foregoing dry matter consisted of—

Fat (butter)	4.05
Albumenoids (caseine, etc.).....	3.32
Sugar of milk	4.71
Various salts	0.73
	<hr/> 12.81

The fluctuations during the entire period were remarkably small. The lowest percentage of water observed was 85.92, and the highest 88.35. In but four instances did the water fall below 86.6, and but four did it rise above 88. The composition of the milk of uniformly well-fed cows is therefore very uniform, and scarcely varies throughout the year, whatever may be the change in temperature, weather, etc.

Morning and evening milk exhibit a constant, though slight, difference in composition, which consists simply in containing *half of one per cent. more fat at night than in the morning.* In the morning milk this fat is replaced by almost precisely the same quantity of water.

Further investigations showed that the proportion of fat is less, in proportion as the time is longer between the milkings. Thus, milk taken after an interval of

10 hours, contained.....	4.36 per cent. of fat.
11 " "	4.31 " "
12 " "	3.97 " "
13 " "	3.97 " "
14 " "	3.51 " "

Taking into account the greater quantity of milk obtained in the morning, the *actual* amount of fat yielded by the cow is rather more at morning than at night.

In making butter, 100 parts of milk yield, on the average, is round numbers, the following proportions of cream, butter, etc., provided the cream rises in a cool apartment, so that no sensible evaporation of water takes place:

Cream	10
Skimmed milk	90
	<hr/> 100 milk.

The ten parts of cream consist of—

Buttermilk	6.0
Butter (calculated without salt).....	3.9
Water removed from butter by salting (calculated without salt)	0.1
	<hr/> 10.0 cream.

The *average percentage* composition of these products is given in the subjoined table:

	New milk.	Skimmed milk.	Cream.	Butter-milk.	Butter.†	Brine.‡
Fat (butter).....	4.00	0.55	35.00	1.67	85.00	0.00
Albumenoids*	3.25	3.37	2.20	3.33	0.51	0.79
Milk sugar	4.50	4.66	3.05	4.61	0.70	1.84
Various salts	0.75	0.78	0.50	0.77	0.12	0.86
Water.....	87.50	90.64	59.25	89.62	13.67	94.91
Total.....	100.00	100.00	100.00	100.00	100.00	100.00

* Caseine and albumen.

† Unsalted.

‡ Brine that separates on working after salting, salt not included.

Butter is produced by the coalescence of the small particles of oil which are suspended in milk, and partially separated by the cream. Chemically considered, it is a mixture of oleine and margarine, with a trace of phosphate and other salts, and certain neutral fats or oils, from which it derives its flavor. It is supposed by many that a portion of the milk sugar is also retained in the butter. There is the least in the best made butter.

The proportion of the oleine or fluid fat and the margarine or semi-fluid fat varies greatly, depending upon a great variety of circumstances, to some of which allusion has before been made. Two specimens analyzed by Bracormot gave the following per cent respectively:

	Summer butter.	Winter butter.
Solid fat or margarine	40	65
Liquid fat or oleine	60	35
	<hr/> 100	<hr/> 100

The proportion of the neutral fats, though always small, is also quite variable.

Butter is called *pure* when it is free from any admixture of the caseine or sugar of the milk. The production of such is possible, and is, to a limited extent, practiced by chemists and experimenters, but, so far as we know, not without expelling the light flavoring oils, which of course practically ruins it for the table.

The proportion of caseine remaining in butter, as ordinarily manufactured, is quite variable, depending upon the manner in which the cream is separated from the other portions of the milk. By the old method of setting milk in shallow pans and permitting currents of dry air to sweep across the surface of the milk, much caseine became dried to the cream so firmly as to be inseparable during all the after processes, finally becoming a portion of the butter. By the latter and more improved processes, with sufficient pains-taking in the after manipulations, the proportion of caseine may be reduced to a mere trace. Upon this, and the proportion of the oleine and the neutral or flavoring fats, the quality of the butter depends, and to the accomplishment of these two specific ends, he who would succeed must direct his efforts.

The increase of the fatty matter is dependent upon the feeding and care of the animal, and to that branch of our subject such allusion has been made as our space will permit.

GETTING AT THE BUTTER.

The process of separating the butter from the mass of the milk now claims our attention.

The operation of *agitating* or *churning the milk* is the simplest of all known methods, and is sometimes practiced, even at the present time, though the results are seldom satisfactory, and the method not to be commended. Setting aside the milk for the partial separation by rising, of the cream, and churning that instead of the milk, is the more common process, and produces the best results.

SETTING AND COOLING THE MILK.

From time immemorial the practice of setting the milk in very shallow pans has prevailed, and the opinion was formerly believed established, that only through a shallow mass of milk could the cream rise to the surface. This practice had its origin in the necessity for cooling the milk soon after it is drawn from the cow, to prevent its souring before the cream could rise, and not, as has been very erroneously inferred, from any real difficulty about the rising of the cream. Hundreds or even thousands of experiments have been conducted with the view to permanently settle this question, and we have yet to learn of the first one which has not resulted in sustaining the principle that with

proper apparatus for cooling, it is of no possible consequence how deep the milk is set for the purpose of raising the cream.

The cooling of the milk is of the first importance. It contains within itself the elements of decay, and when left to itself fermentation and putrefaction speedily ensue. But by reducing the temperature to about 58° or 60°, the process is retarded, not prevented, and time is afforded the cream to rise before the other parts of the milk become so changed in their structure as to entangle and hold the oily portion of the cream. But precisely the same effect may be produced by the application of heat, and we not infrequently hear it recommended. In this case, however, the very important circumstance, that the oils which flavor the butter become volatilized and escape, is quite overlooked.

It is believed, then, to be practically settled, that the best results are attained by reducing the temperature of the milk as soon as practicable, after it is drawn, to about 58° F. The milk should be placed in the vessels where it is to remain before the cooling is commenced, that the rising of the cream may not be retarded by subsequent agitation. The only really practicable method of cooling the milk, without agitating it, is to place it in comparatively narrow vessels, and surround them with cold water, as high or higher than the surface of the milk within. It is idle to attempt to cool milk or any other fluid by the application of any cooling substance to the bottom. If the vessel itself be of a material which is a good conductor, it is a little help, but the process is at best slow and unsatisfactory.

We make the rule that milk should be set in vessels placed in water, and the temperature reduced as soon as may be, to about 58° F., but that the temperature of the room should be about 65° or 70° F.

The form of the vessel is not material, if only they be so narrow that the cooling is effected in season to prevent the souring of the milk before the cream has risen.

The most economical arrangement of which we have any knowledge, consists of a long, narrow tank, with a jacket of tin for the cold water. The most approved form is 8 inches broad, 11 inches deep, and 6 feet long, which is made from a single large sheet of tin, without seam or solder, except where the end and jacket are attached. If more than one is required to hold the milk at each milking, they should be placed side by side in the same frame or sink. In this case it is more economical to dispense with the jacket and use a wooden vat for the water.

There is, in this form of vessel, a very large saving in the cream which adheres to the sides of the smaller style of vessel; but the economy of labor in the cleansing and care of the vessels is really the greatest of all.

Whatever the form of the milk vessels, running water is the best and most economical agent to be employed in cooling the milk. Well water answers a very good purpose, but the labor of raising it is sometimes a bar to its successful use.

Ice should never be used in butter-making in any of its departments, except to reduce the temperature of water, and then it is well to *beware* of ice cold water. The immediate contact of ice with milk, cream or butter, does, in some manner not well understood, exert a disorganizing effect, and the product is permanently injured thereby.

WHEN AND HOW TO SKIM.

Milk, cooled and set as has been recommended, will keep sweet as long as is necessary for the cream to rise, however warm the room, and the time for removing the cream may be subordinated to the convenience of the dairyman. The more convenient and profitable time will generally be found to be from 24 to 30 hours after setting. It should not, in any case, be deferred until the milk begins to turn sour.

The old form of skimmer, required to separate a film of cream, almost as tough as a leather apron from a body of hard loppered milk, is not adapted to the removal of the cream that rises on milk cooled as above described. The cream, under these genial influences, having been constantly parting with its caseine instead of becoming encased in it, is in a condition of fluidity and must be removed by dipping instead of skimming. The most approved implement for this purpose is made of tin in the form of a cone, and holds about a pint. The small end should be made pointed.^a The edges of the large end should be left sharp, and not be rolled or wired. An upright, straight handle should be attached to the large end of the cone. When used, it should be pushed perpendicularly down through the cream into the milk, until the cream runs in on all sides at the same time. If some of the milk is taken with the cream, no injurious result will follow; indeed many good butter-makers prefer taking enough, so that the cream may not become too stiff during the operation of churning.

Cream may be kept several days, if necessary, but it is better, as a rule, to churn every second or third day. The practice which has acquired among many, of keeping cream several days, and drugging it from time to time with saltpetre or some thing else, cannot be commended.

When milk sours, it is because of the formation of lactic acid from the milk sugar. This chemical change is the result of the growth of a microscopic vegetable organism, which, according to Hallier's late investigations, is of the same origin as common yeast. Like common yeast, this plant requires oxygen for its development. This it gathers from the air, if the latter have access; but in the comparative absence of air, as when growing in milk, it decomposes the sugar, and the lactic acid is a chief result of this metamorphosis. If milk, which by short exposure to the air has had the microscopic germs of the ferment-plant sown in it, be then excluded from the air as much as possible, the plant, in its growth, is necessitated to decompose the milk sugar, and hence the milk rapidly sours. On the other hand, exposure to the air supplies the ferment-plant partially with free oxygen, and the milk remains sweet for a longer period. Such is the theory of the change. That low temperatures should prevent souring, is in analogy with all we know of chemical changes.

Stirring the cream does not promote souring, but rather hinders it by increasing access of air; it may be advantageous in making the souring uniform.

WHEN TO CHURN.

Although the milk should never be permitted to sour before skimming, the cream, on the other hand, should become slightly acid before churning. To accomplish this end most expeditiously, the temperature may be raised slightly; keeping it in the warm milk room will usually suffice; but previous to putting it in the churn it should be again cooled, according to the quality of the cream. If it be rich summer cream, 55° is most favorable; if it be the product of short, poor feed, or of straw, or roots, or if the cows have been exposed to cold storms, and under the necessity of exhausting the oleine of the butter, the temperature must be raised to correspond; and it may even require so much heating that little of the butter flavor will remain. For all ordinary cases the range may be set down at from 55° to 65°.

COLORING BUTTER.

So long as our sense of taste is in sympathy with our sense of sight, and so long as cows will produce a different colored butter in June than January, so long it is the dairy-man's privilege to color his butter, if he does it with a harmless substance, so as to bring

it to the standard shade, which is universally recognized as desirable. There has been a good deal of virtuous indignation expressed at various times and places at this practice, but those who have been loudest in their denunciations, have generally confessed that they sometimes employed it.

Undoubtedly the best coloring matter now offered to the public is Annetto-ine, which is purely vegetable, and as harmless as milk. It may now be obtained from all dealers in dairy supplies. It should be put into the cream at the time the cream is put into the churn.

THE CHURN.

Of all the implements employed in in our agricultural economy, the greatest amount of misdirected study and labor has been expended on the churn. Inventors, philosophers, and chemists, have each in turn failed to establish any immutable principles for its construction. Ingenious men have ignored chemical analyses and facts, and have endeavored and claimed to produce good butter in from one to two minutes. They have forgotten that some things *cannot* be done. They *cannot* produce more butter than they have cream. They cannot *properly* separate the butter from the cream in one or two minutes. These are established facts.

It is generally conceded that the desirable points in a perfect churn are, simplicity of construction; an absence of gearing, or tubes, or any complicated system of floats to break or get out of order; no cracks, joints or crevices, which may conceal the germs of putrefaction; with sufficient simple devices to thoroughly agitate the whole mass of cream as nearly alike and at once as practicable; facility of getting out the butter when desired; of perfectly cleansing the churn; ease of operation which will bring its use within the comfortable possibilities of the over-taxed strength of the farmer's wife; and last, though not least, without change of dasher or the purchase and use of supplementary bowls, levers, tables and machinery, to apply recognized principles in mechanics to the perfect and entire separation of the buttermilk from the butter and the even and perfect incorporation of the requisite quality of salt.

ERATION OF THE CREAM.

Aeration of the cream during the churning is of little importance. Neither chemically nor mechanically does a stream of air favor the separation of the butter in any perceptible degree. On the contrary, cream that is cold and slightly sour, is thereby converted into a mass of froth, from which it is exceedingly difficult to make butter.

TIME IN CHURNING.

The duration of churning, as is well recognized in practice, is of great influence on both the quality and quantity of the butter. Half an hour, at least, is considered essential by experienced dairymen for churning when the volume of cream is considerable, and an hour, or even more, is not thought too much by many good authorities.

The globules of fat in the cream or milk, after standing a suitable time, become mostly divested of their envelopes, and it is the object of churning to complete this divestment, and to bring these globules into contact, so that they will unite in one mass. The gentler the motion to which the cream is subjected, the more slowly goes on the process of agglutination, and the closer and finer the union. By slow churning, the butter leaves the churn in nearly a finished condition, and requires a comparatively small amount of working to complete its preparation. On the contrary, when butter is made to come in a few minutes by violent agitation, as in the strife for the repute of

quick work in case of trials of new churns, there is obtained, instead of good butter, in dense and large lumps, a doughy mass, consisting of little balls of fat mixed with buttermilk and cream, and full of air bubbles, which no skill in working can convert into good butter.

While it is true that violent churning will sometimes produce a greater weight of so-called butter, it is demonstrated by chemical analysis that the milk or cream thus treated does not yield so much of its fat as is obtained by slower and gentler agitation.

The greater weight of the product is due to the admixture of buttermilk, which is retained in the spongy mass.

The fact that churning must go on for some time before any visible change is effected in the cream, and that the butter "comes" somewhat suddenly, is due to the exceeding minuteness of the fat globules, of which myriads must unite before they attain a size visible to the unaided eye.

WASHING AND WORKING THE BUTTER.

We do not propose to reconcile the different theories of excellent butter-makers, in the matter of washing butter. When doctors differ who shall decide? It is evident that to prepare butter for keeping, without danger of rancidity and loss of its agreeable flavor, great care is necessary to remove the buttermilk as completely as possible. This is only imperfectly accomplished by simply working or kneading *with the hands*. The work is too hard for most farmers' wives. Or their hands may be physically unadapted, by reason of heat or otherwise, to working butter properly. It is better to work with wooden paddles than the hands, but better than all, to have some ingenious machine which will do it easily, quickly and thoroughly.

The analysis before quoted, shows that salting only removes water and small quantities of sugar. Caseine, which appears to spoil the butter for keeping, is scarcely diminished by ordinary hand working. We believe that washing with water is indispensable for its removal. We wash *our* butter as soon as it comes in little pellets, using water enough to rinse it clean of buttermilk, and finally gathering it in the water, but being careful not to hasten the gathering unnecessarily. The temperature of the water used should depend upon that of the mass in the churn. If the butter is inclined to come soft, we use water at about 48°, or ordinary well water. It may sometimes be necessary to raise the temperature to 62°, so as not to make the butter too hard to work easily. If too hard, the texture of the butter may be injured by working it; if too soft, the oleine and aromatic oils may be washed out. The true medium can be best learned by experience. No arbitrary rules can supply an utter lack of judgment and experience.

Great judgment and care is necessary that the butter is *not worked too much*. This process is so easy in some recent churns, that those who have been used to the old fashioned fatiguing labor, can hardly realize how much easier, quicker and better it can be done.

SALTING.

The proper salting of butter requires great care. The salt should be thoroughly incorporated into the mass so as to reach any remaining particles of either caseine or moisture. All this is perfectly done in the churn, if the practical directions given by the manufacturers are followed. Most people in this country require for flavoring about one ounce of good pure salt to a pound of butter; but the better paying class of customers, who are a little more fastidious about the quality, prefer about one-half as much, and that is found quite sufficient for its preservation, if the caseine has been properly removed.

Independently of its effect as a condiment, salt has two distinct offices to serve in butter-making, viz: 1st, to remove the buttermilk as thoroughly as possible from the pores of the butter; and, 2d, to render harmless what can not be thus removed. The salt attracts water from the buttermilk that it comes in contact with, and also takes up the milk-sugar. It thus effects a partial separation of the constituents of the buttermilk. At the same time it penetrates the latter and converts it into a strong brine, which renders decomposition and rancidity *difficult* if not *impossible*. Sugar has the same effect as salt, but is more costly, and no better in any respect.

It hardly need be stated that the salt must be as pure as possible. It must be perfectly white, must dissolve completely in water to a clear liquid, untroubled by any turbidity, without froth or sediment, must be absolutely odorless, of a pure salt taste, without bitterness, and in a moderately dry room must remain free from perceptible moisture. "Onondaga Factory Filled, or "Ashton's," are excellent brands, and we recommend them, notwithstanding a very prevalent prejudice against any salt of American manufacture. No other ingredient than salt is required for the preservation or flavoring of butter, and no other should be employed under any circumstances.

PACKING AND SELLING.

Butter makers, in the vicinity of large towns, should seek out regular customers for their product, in which case it may be put up in balls, or any other form adapted to the demand. "Philadelphia prints," which have acquired a world wide reputation, are pound balls, with a figure pressed upon the top. They are usually inclosed in a white linen napkin, and packed in a cedar, zinc lined chest, with apartments at each end for ice, to keep it hard while being transported to market and retailed. Other peculiar forms are adopted in other parts of the country to suit the demands or whims of purchasers.

For the great mass of butter-makers the wooden tub, holding from 30 to 100 pounds, must ever be the most economical form of package. In the vicinity of New York city, heavy return pails, of the best white oak, with thick covers, having the owners' names branded upon them, are used and re-used, year after year. In some parts of the west miserably poor oaken tubs are employed, which affect the butter very injuriously; in other localities ashen tubs are the favorites; while in Northern Vermont the most approved tubs are of spruce. Spruce is, unquestionably, least liable of all timber to affect the flavor of the butter injuriously, while it is generally believed that for long keeping and much exposure, good white oak is preferable. Stone and earthen jars and crocks are sometimes used, but we do not recommend them.

We do not sympathize with the sentiment which prevails, to some extent, in nearly every farmer's community, in relation to the undesirability of "middle men" or commission merchants. But, while we would not, in any degree, detract from their importance or their influence, we would urge upon the dairymen who are favorably situated, to establish a direct communication with some consumer or line of consumers. It will even pay an intelligent and active dairyman to devote a week or a month to making the acquaintance of such a number of consumers as he can regularly supply with a uniformly excellent article.

CONCLUSION.

In conclusion, we would say we heartily rejoice at the attention that the proper making of butter and cheese is receiving, at the hands of our thoughtful and intelligent

farmers and our agricultural chemists. The importance and value of the product warrant and demand such attention.

There can not yet be mapped out in any book, any royal road to certain success in all the processes of the dairy. No man can say that his way is the *only* right one, for it is a fact that staggers the wisest investigator, that different persons make butter, of apparently the best quality, by processes which seem contradictory and antagonistic, and in utter violation of some principles which our chemists claim to have established.

We can only say that some things *seem* to be proved. The thoughtful, pains-taking dairyman will always have better success than the careless and untidy one. Always endeavor to *make the best butter*. Be satisfied with nothing else. Add the experience and advice of others to your own, and we are confident that you will feel the reward of honest, earnest effort, in your pocket as well as your conscience.

We cheerfully acknowledge our indebtedness to various writers on the subject in hand, but especially to Prof. S. W. Johnson, of Sheffield Scientific School, Yale College. We have not endeavored to give any new and untried theories, but to give some safe rules for the guidance of those who are not so wise as to be past learning.—*From a publication by Wm. Blanchard, of Concord.*

HAMS.

September 21, 1871.

Hams were cured in ordinary way; with salt, without reference to quantity; smoked with sassafras wood.

Mrs. J. C. WOOD.

Mode of curing hams was as follows:

Make a brine of 4 quarts salt per 100 pounds hams.

" " 4 oz. salt petre " " "

" " 4 oz. pepper " " "

" " 1 qt. molasses " " "

Left in brine 6 weeks, and smoked with hickory wood till dry.

Mrs. G. H. BENSON.

Springfield, Clark Co.

Three hams; butchered Dec. 1870, and salted with Zanesville salt the same day, and in a week a brine made from the same kind of salt as strong as cold water would dissolve it, and the hams covered with it, and as soon as salted enough taken up and smoked, and by the first of March packed in a box with plenty of sweet timothy hay and kept in a dry place, where a current of air passed through the room.

Mrs. A. MOREHOUSE.

RECEIPT FOR CURING HAMS.—To every 100 lbs. ham take 7 lbs. salt, 2 oz. salt petre, 2 lbs. sugar, 4 galls. water. Put this in a barrel and mix; then rub your hams slightly with salt and pack in a barrel; then pour the above in over the hams, and leave them for three to four weeks, owing to size; then take out and repack, and leave them in three or four weeks longer, when they are done, ready for smoking. To keep the flies from them, I always use black pepper, ground fine; this I have always found to be the best to keep the flies from interfering with the hams.

J. H. W. MUMMA.

PREMIUM CROPS THROUGHOUT THE STATE.

WHEAT.

State of Ohio, Union County, ss. :

Robert Gray, being duly sworn, says, he accurately measured the land upon which Robert Belt raised a crop of wheat which he enters for the premium offered by the Union County Agricultural Society, for the year 1871, and that there was one acre and no more.

ROBERT GRAY.

Jacob Hauser and Gilbert Belt, being duly sworn, say, that the crop of wheat represented by Robert Belt, and raised on the land measured by Robert Gray, was weighed, and that there were 24 bushels and 27 pounds, and no less.

GILBERT A. BELT,
JACOB HAUSER.

Plowing and harrowing.....	\$3 00
Drilling.....	1 00
1½ bushels seed, at \$1.25 per bushel	1 83
Harvesting and threshing.....	4 50
Total.....	\$10 38

Soil was second bottom, plowed and harrowed; grain drilled in; seed was Red Mediterranean; drilled in four inches deep.

Robert Belt, being duly sworn, says, that he raised a crop of wheat on the land owned by Robert Gray; that the product weighed, in the presence of Jacob Hauser and Gilbert Belt, was all raised on said land, and that the accompanying statements of the manner of cultivating and the cost is correct, to the best of his knowledge.

R. BELT.

Sworn to before me this 10th day of November, A. D., 1871.

WESLEY GARRARD, J. P.

CORN.

Jackson County, Ohio, ss. :

Charles Radcliff and William Radcliff, being duly sworn by the undersigned, say they accurately measured the land upon which Charles Radcliff raised the crop of corn, which he enters for the premium offered by the Jackson County Agricultural Society, for the year 1871, and that there was one acre and no more; the weight was 7,612 pounds—counting 70 pounds per bushel, there were 108 bushels and 52 pounds, and no less.

CHARLES RADCLIFF,
WILLIAM RADCLIFF.

Sworn to before me, Sept. 28th, 1871.

A. SCOTT, J. P.

PROBABLE COST AND MANNER OF CULTIVATION.

Plowing and harrowing $\frac{1}{2}$ day	\$3 60
Planting and seed	1 00
Cultivation	3 00
	<hr/>
	\$7 00

The soil is old, deep and loamy—manured well with old stable manure. It was thoroughly plowed about the middle of April; harrowed and planted April 27th; planted one way—furrows three feet apart; planted thick in the row. The land is three miles east of the town of Jackson C. H., Jackson county, Ohio.

Sept. 28th, 1871.

CHARLES RADCLIFF.

Meigs County, ss.;

James Maguire, being duly sworn, says that he raised a crop of corn the past season upon the land measured by Wm. Graham, and the quantity raised thereon was seventy-six bushels and two-thirds and no more, measured, and that the statement in regard to manner of cultivation, etc., is correct to the best of his knowledge.

J. G. MAGUIRE.

Sworn to before me this 20th day of November, 1871.

ALEX. HOGUE, J. P.

The said corn grew on hill land; the kind of soil is brown, or red clay, mixed with fine limestone; condition of the soil a heavy blue grass; the time of breaking first of March.

COST OF CULTIVATION.

Four loads of manure	\$5 00
One day's breaking	3 00
One half day's harrowing	1 50
Furrowing and planting	2 00
Plowing and hoeing four times	8 00
Harvesting and cribbing	4 00
	<hr/>
	\$23 50

Number of bushels, 76.

Meigs County, ss.:

William Graham, being duly sworn, says he accurately measured the land upon which James Maguire raised a crop of corn the past season, and the quantity of land is one acre and no more.

WM. GRAHAM.

Sworn to before me this 20th day of November, 1871.

ALEX. HOGUE, J. P.

Meigs County, ss.:

C. B. Holt, being duly sworn, says he accurately measured the land upon which Luman Brine raised a crop of corn the past season, and the quantity of land is one acre and no more.

Sworn to before me this 20th day of November, 1871.

JAMES PETTY, J. P.

Meigs County, ss.:

Luman Brine, being duly sworn by me, says that he raised a crop of corn the past season upon the land measured by C. B. Holt (surveyor), and the quantity raised thereon

was ninety bushels and no more nor less, by weight, and that the statement in regard to manner of cultivation, etc., is correct to the best of his knowledge.

Sworn to before me this 20th day of November, 1871.

JAMES PETTY, J. P.

MANNER OF CULTIVATION.

The land was black loamy bottom land, and has been in grass forty years. It never was plowed until last January. The cultivation was the same as the other acre I put in, excepting the manure. I put no manure in the hill

One day plowing and harrowing	\$2 50
Four days' labor.....	4 00
One day cutting.....	1 00
Three days' husking.....	3 00
	<hr/>
	\$10 50
37 shocks of fodder, at 10 cents per shock	\$3 70
96 bushels of corn, at home 50 cents per bushel	45 00
	<hr/>
	\$48 70
	10 50
	<hr/>
	\$38 20

Meigs County, ss. :

C. B. Holt, being duly sworn, says he accurately measured the land upon which Luman Brine raised a crop of corn the past season, and the quantity of land is one acre and no more.

Sworn to before me this 26th day of October, 1871.

ALEX. HOGUE, J. P.

Luman Brine, being duly sworn, says that he raised a crop of corn the past season upon the land measured by C. B. Holt (surveyor), and the quantity raised thereon was one hundred and four (104) bushels and no more, by weight, and that the statement in regard to manner of cultivation, etc., is correct to the best of his knowledge.

Sworn to before me this 26th day of October, 1871.

ALEX. HOGUE, J. P.

MANNER OF CULTIVATION.

The land was rich, sandy bottom. I put about one shovelful of stable horse manure to three hills; plowed the ground thoroughly the first week in May, and furrowed the ground both ways four feet apart; dropped four kernels of white corn on the manure, and covered about two inches deep; when it was about two inches high, plowed it both ways with a double shovel plow, and hoed it well; and when it was about six inches high, plowed and hoed the same as before. And that is all was done until it got pretty ripe. It was then cut up and put in shocks, and there stood about one month, and was husked and put into a basket and weighed.

2½ loads of manure	\$2 50
1 day plowing and harrowing	2 50
4 days' labor	4 00
1 day cutting.....	1 00
3 days' husking.....	3 00
	<hr/>
	\$13 00
37 shocks of fodder, at 10 cents ashock	\$3 70
104 bushels of corn, at home 50 cents a bushel	52 00
	<hr/>
	\$55 70
	13 00
	<hr/>
	\$42 70

Irwin Station, Union County.

This is to certify that I raised on one acre of ground, ninety bushels of weighed corn, and on one other eighty-nine bushels and 40 pounds of weighed corn; the above corn was husked inside of the present month, and is perfectly sound and dry. The kind of corn raised is White Cap; soil all black, and the fifth crop of corn that has been raised on the ground in succession. The ground was plowed deep, harrowed twice, and then rolled and planted with a drill in rows three and a half feet apart, about the 10th of May; tended by being plowed through three times by a double shovel plow; no manure of any kind used.

CHAS. A. McMULLAN.

COST OF RAISING.

Plowing ground.....	\$4 00
Harrowing, about	1 75
Planting'	50
Rolling	50
Cultivating 3 times, about	3 50
Cutting corn up.....	4 00
Husking and cribbing	7 50
Total cost of raising two acres	\$21 75
" " one acre	10 37½

We certify the above to be a true and correct report.

CHAS. A. McMULLAN,
WM. B. HERRIOTT.

Sworn to and subscribed before me this 11th day of November, A. D. 1871.

WESLEY GARRARD, J. P.

State of Ohio, Washington County, ss.:

Before me, R. C. Smithson, one of the justices of the peace in and for said county, personally came F. M. Gevrez, Isaac Devoll and William Clark, who being duly sworn according to law, deposes and saith that they measured five acres of hill land, and the corn raised on the same this year by F. M. Gevrez, and there were three hundred and thirty-seven bushels, or sixty-seven and two-fifths of a bushel per acre. This 21st day of October, 1871.

(Signed)

F. M. GEVREZ,
ISAAC DEVOLL,
WM. CLARK.

Sworn to and subscribed before me this 21st day of October, 1871.

(Signed)

R. C. SMITHSON, J. P.

MODE OF CULTURE AND EXPENSE.

Between the 20th and 25th of March, 1871, I plowed five acres of sod on the summit of a hill (soil, sandy loam); plowed about eight inches deep; harrowed the last week in April, and furrowed two ways, four feet apart, with a shovel plow; planted May 1st, with calico corn; worked the first time between the 25th and 28th of May, plowing with a double shovel, and dressing with a hoe; worked the second time between the 13th and 16th of June, same as first, and thinned to three in a hill; worked the third time

between the 20th and 28th of June, with double shovel. Labor worth \$1.50 per day including board; team, \$2.00 per day.)

Plowing one hand and team, 5 days, at \$3.50.....	\$17 50
Harrowing, 2 " 3.50.....	7 00
Furrowing, one horse, 2 " 2.50.....	5 00
Planting, 4 " 1.50.....	6 00
First working, 6 " 1.50.....	9 00
First working, one horse, 2 " 1.00.....	2 00
Second working, 6 " 1.50.....	9 00
Second working, one horse, 2 " 1.00.....	2 00
Third working, 2 " 1.50.....	3 00
Third working, one horse, 2 " 1.00.....	2 00
Rent of ground, at \$4.00 per acre	20 00
Seed, $\frac{1}{4}$ bushel, at 80c.	60
Total expense.....	\$83 10

(Signed)

F. M. GEVREZ.

State of Ohio, Trumbull County, ss.:

J. Allen, being duly sworn, says that he accurately measured the land upon which A. C. Fuller raised a crop of corn the past season, and that the quantity of land is two acres, and no more.

J. ALLEN.

A. C. Fuller, being duly sworn, says that he raised a crop of corn the past season upon the ground measured by J. Allen, and that the quantity of corn raised thereon was four hundred and eight (408) bushels, and no less, weighed and measured, and the statements in regard to the manner of cultivation, etc., are correct to the best of my knowledge.

A. C. FULLER.

Sworn to before me, this 2d day of December, A. D. 1871.

J. A. BLACKBURN, *Justice of the Peace.*

CORN FIELD—TWO ACRES—CLOVER SOD TURNED OVER.

1871—April 28.	To 1 day's plowing, at \$3 per day.....	\$3 00
" 29.	To 1 " " "	3 00
May 8.	To 1 " rolling and harrowing, at \$3 per day	3 00
" 10.	To $\frac{1}{2}$ " marking, at \$2 25 per day.....	3 00
" 10.	To 14 quarts seed corn, at \$1 per bushel	1 25
" 11.	To 5 men, at $\frac{1}{2}$ day each, at \$1 per day.....	2 50
June 1.	To 1 day's cultivating at \$2 50 per day.....	2 50
" 2.	To 2 " hoeing, at \$1 25 per day.....	2 50
" 3.	To 1 " ashing, at \$1 25 per day.....	1 25
" 12.	To 1 " cultivating, at \$2 50 per day.....	2 50
" 13.	To 2 " hoeing, at \$1 25 per day.....	2 50
" 26.	To 1 " cultivating, at \$2 50 per day.....	2 50
" 27.	To 2 " hoeing, at \$1 25 per day.....	2 50
July 10.	To 1 " cultivating, at \$2 50 per day	2 50
" 11.	To 2 " hoeing, at \$1 25 per day	2 50
" 22.	To 1 " cultivating, at \$2 50 per day.....	1 50
" 24.	To 2 " hoeing, at \$1 25 per day.....	2 50
Sept. 18.	To 4 " cutting up corn, at \$1 per day.....	4 00
Nov. 20.	To 9 " husking, at \$1 per day.....	9 00
		<u>\$52 75</u>

hundred and forty-eight (348) bushels, and no more, weighed; and the statements in regard to the manner of cultivation, etc., are correct, to the best of my knowledge.

LEVI BISHOP.

Sworn to, and subscribed, this September 25th, 1871.

J. J. SHERWOOD, J. P.

State of Ohio, Delaware County, ss.:

S. A. Olmsted, being duly sworn, says he measured the land upon which Levi Bishop raised a crop of oats the past season, and the quantity of the land is five acres and fourteen rods, and no more.

S. A. OLMSTED.

Sworn to, and subscribed, this 25th day of September, A. D. 1871.

J. J. SHERWOOD, J. P.

The following is a statement in regard to a piece of oats raised by Levi Bishop, the past season, and kind and condition of soil:

The soil was black loam, slightly rolling; the time of seeding was the last of March; the mode of seeding was to simply plow the ground, sow on the grain and harrow in the quantity of grain used was twelve bushels; the kind of grain was the common white oats, mixed with about one-third black or side oats; the ground was corn stubble, slightly manured before planting the corn (on the poor spots); but no manure before sowing to oats; the expense of labor for putting in the grain would not exceed ten dollars.

LEVI BISHOP.

November 1st, 1871.

Meigs County, ss.:

C. B. Holt, being duly sworn, says he accurately measured the land upon which H. Holt raised a crop of oats the past season, also weighed the oats; and the quantity of land was one acre and one hundred and ten rods and no more; and that the quantity of oats raised thereon was ninety-two bushels and twenty-seven pounds by weight and no more, which is a fraction over fifty-five bushels to the acre; and that the statements in regard to the manner of cultivation, etc., are correct to the best of his knowledge.

C. B. HOLT.

Sworn to before me, this 24th day of October, 1871.

JAMES PETTY, J. P.

MANNER OF CULTIVATION.

The land is the west side-hill, as the other acre put in. It had the same treatment all the way through as the acre. It is the balance I raised of the Norway oats. I had one little strip about one rod wide of an old fence row, that was very rich. The oats on that strip were six feet high, and stood up well. I think that on that strip there was at the rate of one hundred bushels to the acre, and therefore I think they are the best oats for the farmer to raise, for this reason: they can sow them on good ground, and they will stand up.

Meigs County, ss.:

C. B. Holt, being duly sworn, says he accurately measured the land upon which H. Holt raised a crop of oats the past season, and also weighed the oats; and the quantity of land was one acre and no more, and that the quantity of oats raised thereon was sixty-two bushels by weight and no more; and that the statements in regard to the manner of cultivation, etc., are correct to the best of his knowledge.

C. B. HOLT.

MANNER OF CULTIVATION.

The land was the west side-hill; rather poor land. I plowed and harrowed it well in September, and then the first week in March plowed it with a double-shovel plow, and then sowed about one and one-half bushels of Norway oats on it; harrowed it both ways, gave it an extra harrowing, and sowed some grass seed and brushed it in, till it was almost like an onion bed; cut, shocked and threshed when ripe enough, and weighed.

To 2 days' plowing and harrowing, at \$2.50 per day	\$5 00
To one-half day's plowing with double shovel, at \$1.50 per day	75
To 1 day's harvesting.....	2 00
To hauling and threshing, about	4 00
Total	<u>\$11 75</u>

We sent to Chattanooga, Tenn., one year ago, and got 3½ pounds of Norway oats; sowed them and threshed with a flail to keep the seed pure; raised a little over four bushels; sowed that on 2 acres and 110 rods; raised 154 bushels and 27 pounds. They will not fall on good ground. We are selling them at 75 cents per bushel at home for seed.

62 bushels at 75 cents	\$46 50
The straw is worth about	5 00
Total	<u>\$51 50</u>
Expense	11 75
Profit	<u>\$39 75</u>

Meigs County, ss :

James Maguire, being duly sworn, says that he raised a crop of oats the past season, upon the land measured by Asahel Hodge, and the quantity raised thereon was fifty-four bushels and no more, measured; and that the statements in regard to the manner of cultivation, etc., are correct to the best of his knowledge.

J. G. MAGUIRE.

Sworn to before me, this 20th day of November, 1871.

ALEX. HOGUE, J. P.

The said oats grew on hill land; the kind of soil, sandy loam; condition of the soil, corn grown last year; mode of putting it in the ground, plowed in with a shovel plow the first of March; expense of putting in—one day's plowing, \$2; the amount of seed, 1½ bushels; the kind of seed, the big white oats. The expense of harvesting I cannot exactly tell, as the said acre was near the middle of the field. Amount, 54½ bushels.

Meigs County, ss :

Asahel Hodge, being duly sworn, says he accurately measured the land upon which James Maguire raised a crop of oats the past season, and the quantity of land is one acre and no more.

A. M. HODGE.

Sworn to before me, this 20th day of November, 1871.

ALEX. HOGUE, J. P.

State of Ohio, Union County, ss :

Charles Ganone, being duly sworn, says he accurately measured the land upon which Robert Belt raised the crop of oats which he enters for the premium offered by the Union County Agricultural Society for the year 1871, and that there were two acres and no more.

CHARLES GANONE.

Sworn to before me, this 10th day of November, 1871.

WESLEY GARRARD, J. P.

State of Ohio, Union County, ss :

Samuel Westlake, being duly sworn, says that he was present when the crop of oats represented by Robert Belt to have been raised on the land measured by Charles Ganone was weighed, and that there were one hundred and fifty-five bushels and no less.

SAMUEL WESTLAKE.

Sworn to before me, this 10th day of November, 1871.

WESLEY GARRARD, J. P.

EXPENSE OF CULTIVATION.

To harrowing and plowing	\$3 00
To 3 bushels seed	1 50
To labor in cutting	4 00
To threshing	6 68
Total	\$15 16

Seed was sown by hand and plowed in with double-shovel plow, in first bottom land. The seed was Norway oats, and put into the ground about two and one-half inches.

State of Ohio, Union County, ss :

Robert Bett, being duly sworn, says that he raised a crop of oats on the land measured by Charles Ganone ; that the product, weighed in the presence of Samuel Westlake, was all raised on said land, and that the accompanying statements of the manner of cultivation and cost are correct to the best of his knowledge.

R. BETT.

Sworn to before me, this 10th day of November, 1871.

WESLEY GARRARD, J. P.

POTATOES.

Meigs County, ss :

William Foster, being duly sworn, says he accurately measured the land upon which he raised a crop of potatoes the past season, and the quantity of the land is 147½ rods and no more.

Meigs County, ss :

William Foster, being duly sworn, says that he raised a crop of potatoes the past season upon the land measured by himself, and the quantity raised thereon was 189½ bush. is measured, equal to 206 bushels per acre ; and that the statements in regard to the manner of cultivation are true.

Sworn to before me, this 24th day of November, 1871.

D. BAILEY, J. P.

EXPENSE OF CULTIVATION.

To 20 loads manure, top-dressed barnyard	\$10 00
To 1 day's plowing	3 50
To 9 days' digging	9 00
To 3 days' marketing	10 50
To tending crop	10 00
Total	<u>\$43 00</u>

WILLIAM FOSTER.

State of Ohio, Trumbull County, ss :

Burt Swager, being duly sworn, says that he accurately measured the land upon which

Daniel W. Read raised the following crops the past season : One-half acre of potatoes ; two acres of corn ; four and 104-160ths acres of oats ; and that the quantity of land is as above stated and no more.

BURT SWAGER.

D. W. Read, being duly sworn, says that he raised a crop of potatoes, and that the quantity raised thereon was 188½ bushels ; a crop of corn, and that the quantity raised thereon was 273½ bushels ; a crop of oats, and that the quantity raised per acre of the oats is 56 bushels by measure and 62½ bushels by weight ; the above mentioned crops were all raised the past season, and that the quantity of potatoes and grain was measured in a sealed half-bushel, and that the ground whereon the aforesaid crops were raised was measured by Burt Swager ; and that the statements in regard to the manner of cultivation, etc., are correct to the best of his knowledge.

D. W. READ.

Sworn to before me this 20th day of November, A. D. 1871.

C. J. HICKOCK, J. P.

The following is a description of the mode and expense of raising the above crops :

The ground on which the potatoes grew was a light sandy soil, in pasture the year before ; plowed to a depth of six inches and then dressed with five two-horse loads of well-rotted hog manure, then thoroughly harrowed, and then furrowed out three feet six inches apart, hills two feet apart in the row ; as soon as they were up so that the rows could be followed they were cultivated out with a one-horse cultivator ; after they were large enough to hoe a two-horse cultivator was run through them, and then they were dressed out with the hoe. I estimate the expense of raising them as follows :

Plowing	\$1 00
Drawing manure	1 00
Harrowing	50
Planting	1 50
Hoeing and cultivating	1 50
Digging	6 58
Total	<u>\$12 08</u>

Cost per bushel, 6 cents and 4 12-47 mills.

The land on which the corn grew has been in meadow over thirty years ; was plowed to the depth of five inches, then thoroughly harrowed and marked out four feet apart

both ways; as soon as the rows of corn could be followed, it was cultivated with a one-horse cultivator both ways, after that the two-horse cultivator was run through both ways; no hoeing done on it of any account; a few hills hoed on one side; no manure used.

I estimate the cost of the above crop as follows:

Plowing	\$4 00
Harrowing	2 00
Planting	1 50
Marking the land	50
Cultivating	3 50
Husking the corn	10 92
Total	\$20 42

Cost per bushel, 7.48-100.

The oats were raised on land that was in corn the year before; a part of the land was plowed late in the fall, the rest as early in the spring as the season would admit; two and a half bushels of seed were used per acre; sowed broadcast and well harrowed; no manure used.

Plowing per acre	\$1 50
Sowing "	25
Harrowing per acre	50
Harvesting "	1 00

Meigs County, ss.:

James G. Maguire, being duly sworn, says, that he raised a crop of potatoes, and also a crop of timothy seed, the past season, upon land measured by Wm. Graham, and the quantity raised thereon was seventy-five bushels of potatoes, and two and a half bushels of timothy seed, measured. And that the statement in regard to the manner of cultivating each is correct, to the best of his knowledge.

J. G. MAGUIRE.

Sworn to before me this 20th day of November, 1871.

ALEX. HOGUE, J. P.

The said potatoes grew on newly cleared land; the kind of soil, black loam; the kind of seed, Peachblew; amount of seed on said half acre, 6 bushels; time of planting, 20th of June.

One day's plowing	\$3 00
One half day's harrowing	1 50
Furrowing and planting	3 00
Plowing and hoeing three times	6 00
Digging and hauling	5 00

The said half acre of timothy seed grew on hilland; the kind of soil, red clay.

Harvesting and threshing	\$2 75
Amount of seed 2½ bushels, value \$5 per bushel	12 50

Meigs County, ss.:

Wm. Graham, being duly sworn, says, he accurately measured the land upon which James G. Maguire raised a crop of potatoes. Also a crop of timothy seed, the past season, and the quantity of land is for each one half acre, and no more.

WM. GRAHAM.

Sworn to before me this 20th day of November, 1871.

ALEX. HOGUE, J. P.

SWEET POTATOES.

Meigs County, ss. :

C. B. Holt, being duly sworn, says, he accurately measured the land upon which H. Holt raised a crop of sweet potatoes the past season, and also weighed the potatoes, and the quantity of land was one-fourth of an acre, and no more ; and that the quantity of sweet potatoes raised thereon was thirty-five hundred lbs. by weight, and no more ; and that the statement in regard to manner of cultivation, &c., is correct, to the best of his knowledge.

C. B. HOLT.

Sworn to before me this 24th day of October, 1871.

JAMES PETTY, J. P.

Manner of cultivation :

The land was rich bottom ground, but not sandy ; hauled some four loads of horse manure ; plowed the ground in January ; put the manure on the first of May ; plowed it in with a double shovel plow ; harrowed the ground well ; threwed it up into ridges about four feet apart, and then put my sprouts in about eight inches apart, which I had sprouted in a hot bed ; my sprouts were white poplar roots ; stirred the ground about once a week, until the vines got too large, then, in September, dug them and weighed them.

4 loads of manure, at \$1.00 per load.....	\$4 00
1 day's plowing and harrowing, at \$2.50 per day.....	2 50
4 days' labor, at \$1.00 per day.....	4 00
4 days' digging, at \$1.00 per day.....	4 00
4 days' marketing, at \$1.50 per day.....	6 00
	<hr/>
	\$20 50
We sold by measure, which took 45 lbs. to the bushel, that would be 77	
bushels and 35 lbs., at \$1.00 per bushel.....	\$77 80
Deduct the above.....	20 50
	<hr/>
	\$57 30

BARLEY.

State of Ohio, Stark County, ss. :

Before me, a Notary Public within and for said county, personally came Jacob H. Bair, and after being by me sworn made the following statement, to wit : That from two acres of ground he raised ninety-two bushels of barley. The land on which said barley grew was manured during the winter of 1869 and 1870, with sheep manure, at the rate of about two horse loads to the acre, and in the spring of 1870 it was plowed about eight inches deep and planted in corn on the 16th day of May. In the spring of 1871, it was plowed about the same depth and sowed in Barley on the 15th day of April, at the rate of 2½ bushels of seed to the acre. Before sowing the barley the ground was harrowed over once with an ordinary harrow, then the seed was sown broadcast, then harrowed over twice, crossing the second time, and then dragged over with a heavy log. I harvested this crop of Barley July 15th, 1871.

J. H. BAIR.

Sworn to and subscribed, in my presence, this 26th day of December, 1871.

JOHN F. CLARK, N. P.

At the same time and place came John C. Schafer and Andrew J. Morter, who, upon their oath, say that they assisted the aforesaid J. H. Bair to measure the land and the product, and that the statement of J. H. Bair is true, as they verily believe.

A. J. MORTER.
J. C. SHAFER.

State of Ohio, Stark County, ss. :

Before me, the undersigned Notary Public, personally appeared George C. Rutter and George C. Leeper, who made solemn oath that they did accurately survey two acres of ground whereon Gassendi Stump raised seventy-two bushels of barley. They further made oath that they measured the barley, and the said two acres yielded seventy-two bushels.

(Signed)

G. C. LEEPER,
G. C. RUTTER.

Sworn to, and subscribed this 16th day of September, before me.

LEVI STUMP, N. P.

I, the undersigned, raised the crop of barley mentioned in the above affidavit, on the farm of Dr. Jas. G. Leeper. The said two acres were in corn in 1870, and prior to being in corn were in pasture four years.

GASSENDI STUMP.

FLAX-SEED.

The State of Ohio, Delaware County, ss.

David Eaton, being duly sworn, says he measured the land upon which R. G. McMaster raised a crop of flax-seed the past season, and the quantity of the land is three acres, and no more.

DAVID EATON.

Sworn to before me, this 30th day of October, 1871.

WM. WILLIAMS, J. P.

The State of Ohio, Delaware County, ss.

R. G. McMaster, being duly sworn, says that he raised a crop of flax-seed the past season upon the land measured by David Eaton, and the quantity of grain raised thereon was fifty-six bushels and twenty-one pounds, and no more, weighed, and the statements in regard to the manner of cultivation, etc., are correct, to the best of my knowledge.

The soil yellow; white and brown seed; one-half bushel to the acre; put in the last week in April; the ground plowed and harrowed, seed sown, brushed and rolled.

R. G. McMASTER.

Sworn and subscribed to before me, this 30th day of October, 1871.

WM. WILLIAMS, J. P.

The State of Ohio, Delaware County, ss.

S. A. Olmsted, being duly sworn, says he measured the land upon which Evan McCreary raised a crop of flax-seed the past season, and the quantity of land is four acres and eight rods, and no more.

S. A. OLMSTED.

Sworn to and subscribed this 25th day of September, A. D. 1871.

J. J. SHERWOOD, J. P.

The State of Ohio, Delaware County, ss.

Evan McCreary, being duly sworn, says he raised a crop of flax-seed the past season upon the land measured by S. A. Olmsted, and the quantity of grain raised thereon was eighty-five bushels, and no more, weighed, and the statements in regard to the manner of cultivation, etc., are correct, to the best of my knowledge.

EVAN MCCREARY.

Sworn to and subscribed this 25th day of September, A. D. 1871.

J. J. SHERWOOD, J. P.

The above flax-seed was raised on sugar tree land, rather low or flat; the ground was a meadow sward, turned up last year and put to corn; ploughed about the 20th of April and twice harrowed, the seed sown, and then rolled without manure.

EVAN MCCREARY.

The State of Ohio, Trumbull County, ss.

Wallace Kennedy, being duly sworn, says that he accurately measured the land upon which John W. Turner raised a crop of flax-seed the past season, and that the quantity of land is four acres and fifteen-sixteenths, and no more.

WALLACE KENNEDY.

Sworn to and subscribed before me, this 2d of November, A. D. 1871.

JOHN REEVES, J. P.

The State of Ohio, Trumbull County, ss.

John W. Turner, being duly sworn, says that he raised a crop of flax-seed the past season upon the ground measured by Wallace Kennedy, and that the quantity of seed raised thereon was one hundred and four bushels, and no less; it was sown the second week in April, on sod just turned under, without manure or any other extra cultivation. The statements made in regard to the manner of cultivation, etc., are correct, to the best of my knowledge.

JOHN W. TURNER.

Sworn to and subscribed before me, this 4th day of December, 1871.

A. D. WEBB, Notary Public.

COST OF RAISING THE ABOVE CROP.

3 days plowing.....	\$10
2 " harrowing.....	7
3 " cutting	6
5 " tramping.....	15
	<hr/>
	\$38

BROOM CORN.

The State Ohio, Meigs County, ss.

Wm. Graham, being duly sworn, says he accurately measured the land upon which James McGuire raised a crop of broom corn the past season, and the quantity of land is one-half acre, and no more.

WM. GRAHAM.

Sworn to before me, this 20th day of November, 1871.

ALEX. HOGUE, J. P.

The State of Ohio, Meigs County, ss.

James Maguire, being duly sworn, says that he raised a crop of broom corn the past season upon the land measured by Wm. Graham, and the quantity raised thereon was 385 pounds, and no more, weighed, and that the statements in regard to the manner of cultivation, etc., are true, to the best of his knowledge.

J. G. MAGUIRE.

Sworn to before me, this 20th day of November, 1871.

ALEX. HOGUE, J. P.

MANGEL-WURTZEL.

This is to certify that on the 31st of October, 1871, we measured the ground and gathered the beets from a piece of ground belonging to Smith Hulin, and that there was 40 8-10ths square rods of the ground, and one hundred and thirty-seven bushels of the mangel-wurtzels.

A. W. COHEL,
ELI T. CALLAHAN.

State of Ohio, Mahoning county, ss :

Personally appeared before me, a justice of the peace in and for Green township, Mahoning county, Ohio, Andrew Cohel and Eli T. Callahan, who being duly sworn according to law, say that the matters contained in the above are true.

Sworn to and subscribed before me and in my presence this first day of March, A. D. 1871.

HENRY WILHELM, J. P.

The seed of the mangel-wurtzel was obtained from Mr. Gregory, of Marblehead, Massachusetts; planted the last of May, on a black, rich, mucky loam soil, the rows about three feet apart, and fifteen inches in the row; plowed and hoed so as to keep clean. The weather about the first of June was so dry that they did not come up until the rain fell, about the first of June, when they started and grew very fast until the dry weather set in again, which checked their growth so that the season was very unfavorable. The ground has been in truck several years, and manured but little. Last spring I put on about four loads of good stable-manure, which, on account of the dry season, was a detriment to the crop; they grew late in the fall when the season is unfavorable.

SMITH HULIN.

POTATOES.

This is to certify that about the 10th of September, 1871, we measured the ground, and dug and measured the potatoes raised on two pieces of ground belonging to Smith Hulin, and that there was in the first piece forty-three, and in the second forty square rods. From the first piece we obtained ninety-six, and from the second we obtained eighty-four bushels of potatoes.

ELI T. CALLAHAN,
MILLER CALLAHAN.

Personally appeared before me, a justice of the peace in and for said county, Eli Callahan and Miller Callahan, who, being sworn according to law, say that the matters set forth in the above statement are true. This first day of November, A. D. 1871.

HENRY WILHELM, J. P.

The potatoes on the above pieces of land were planted in the latter part of April, on clover sod of one year, in hills about three feet apart. The seed was out in pieces, each containing two or three eyes; three pieces put in a hill, and covered rather shallow; plowed and hoed as soon as they were sufficiently up, and were kept perfectly clean until they were hilled; they were well hilled, after which they became very weedy, to the detriment of the crop. The first kind was Harrison, and the second Bresees No. 2. A small portion of the ground was manured.

SMITH HULIN.

CORN.

The land upon which this crop was raised is river bottom, and what is generally called "made land," or deposits from the back-water of the Muskingum River. It was entirely new land, no crop having ever been raised on the same before, and no manure applied. The seed used was of the Yellow Dent variety, which I planted about the 10th or 12th of May last, in hills about three and one-half feet apart. The corn was plowed three times, and hoed twice, about eight or ten days intervening between the plowings. There were from three to seven stalks produced to the hill, probably an average of five stalks, and of ordinary height.

There was also raised on this piece of land about seven or eight wagon-loads of pumpkins, which laid so thick upon the ground that a wagon could not be driven on the field without passing over them.

EXPENSES OF CULTIVATION.

To one day's plowing and harrowing, at \$3 per day	\$3 00
To four days' planting and cultivating, at \$1 per day	4 00
To three days' harvesting, at \$1.25 per day	3 75
To one day's marketing, with team	3 50
Total expenses	<u>14 25</u>

Morgan county, ss :

John T. Gillespie, being duly sworn, says that he raised a crop of Indian corn the past season upon the land measured by John Miller, and the quantity raised thereon was one hundred and eight bushels and twenty-nine pounds, and no more, weighed and measured, and that the statements in regard to the manner of cultivation are correct to the best of his knowledge.

(Signed)

J. T. GILLESPIE.

Sworn to before me this 18th day of November, A. D. 1871.

JOHN TIMMS, J. P.

Morgan county, ss :

John Miller, being duly sworn, says he accurately measured the land upon which John T. Gillespie raised a crop of Indian corn the past season, and the quantity of land is one acre and no more.

(Signed)

JOHN MILLER.

Sworn to before me this 18th day of November, A. D. 1871.

Mr. Gillespie produced a sample of the corn raised by him on this piece of land, at the meeting of the board of directors of the Morgan County Agricultural Society on the 20th instant, and was awarded the first premium of \$5 on the same.

JOHN S. ADAIR.

Abstracts of Reports of County Societies—List of Officers—Time and place of Holding Fair, &c.

Counties.	President.	Post-office.	Vice-President.	Post-office.	Treasurer.	Post-office.
Adams	No organization	Lima	Robert Mehaffey	Lima	James Irvine	Lima.
Allen	J. R. Hughes	Ashland	H. Nichols	Ashland	T. C. Bushnell	Ashland.
Ashland	J. B. F. Sampson	Ashabula	J. S. Higgins	Harpersfield	E. C. Wade	Jefferson.
Ashabula	H. J. Nettleton	Hibbardville	J. S. Kelly	Athens	George W. Baker	Athens.
Athens	Isaac Stanley	Wapakonetta	Shepherd Davis	Wapakonetta	Amos Copeland	Saint John's.
Auglaize	J. Kelly	Saint Clairsville	G. R. Shields	Saint Clairsville	Stephen Gurringer	Saint Clairsville.
Belmont	David Brown	Georgetown	W. H. H. Campbell	Georgetown	C. F. King	Georgetown.
Brown	John E. Brose	Ross	A. Allen	Hamilton	James Giffin	Hamilton.
Butler	Fergus Anderson	Carrollton	E. W. Stafford	Carrollton	Wash. Butler	Carrollton.
Carroll	Alexander Simpson	Urbana	A. R. Ludlow	Urbana	D. W. Todd	Urbana.
Champaign	*Daniel Blose	Springfield	A. M. Marsh	Springfield	Luther Brown	Springfield.
Clarke	Peter Sintz	Batavia	J. J. Lacey	Boston	S. Robinson	Boston.
Clermont	J. L. Weaver	Wilmingon	John Robison	Wilmingon	C. N. Osborn	Wilmingon.
Clinton	C. M. Walker	New Lisbon	B. C. Blackburn	West Beaver	James Scott	New Lisbon.
Columbiana	John L. Crowell	Coshocton	G. H. Wright	Roscoe	Joseph L. Rue	Coshocton.
Coshocton	John S. Elliot	Bucyrus	C. H. Cannon	Bucyrus	J. B. Gormley	Bucyrus.
Crawford	Josiah Koller	Cleveland	George W. Brawley	Cleveland	B. H. Starr	Cleveland.
Cuyahoga	D. L. Wightman	Greenville	J. P. Partee	Wiley's Station	Amos Hahn	Greenville.
Darke	George D. Miller	Defiance	Fred. P. Vergon	Defiance	G. W. Bechel	Defiance.
Defiance	W. D. Hill	Delaware	A. J. Mowry	Delaware	Walter F. Watson	Delaware.
Delaware	Larris S. Felkner	Castalia	C. M. L. Wiseman	Milan	A. W. Froot	Sandusky.
Erie	C. Caswell	Lancaster	J. M. Fuson	Lancaster	John C. Weaver	Lancaster.
Fairfield	B. W. Carlisle	Washington C. H.	A. S. Fleet	Washington	D. Furtwangler	Washington C. H.
Fayette	Henry Kirk	Columbus	James M. Mills	Archibald	H. O'Kane	Columbus.
Franklin	John M. Pugh	Wauseon	L. L. Reed	Gallipolis	David Ayres	Ottokee.
Fulton	H. R. Boody	Gallipolis	Noah Hyatt	Amurn	William C. Hayward	Gallipolis.
Gallia	McCoy Ralston	Barton	William Durrell, jr.	Osborne	R. N. Ford	Barton.
Gauga	Luther Russell	Xenia	George W. Powell	Cambridge	John Leaman	Xenia.
Greene	David Millen	Cambridge	O. G. Cope	Walnut Hills	G. C. Lofland	Cambridge.
Guernsey	John C. McClallen	Avondale	J. E. Cowdrick	Findlay	Jackson Slane	Cincinnati.
Hamilton	Theophilus Wilson	Findlay		Kenton	G. W. Galloway	Findlay.
Hancock	Hanks P. Gage	Kenton		Short Creek	J. W. Binkley	Kenton.
Hardin	James M. White	Cadiz		Napoleon	John M. Hanna	Cadiz.
Harrison	S. Herron	Napoleon			William Sheffield	Napoleon.
Henry	J. A. Stout					

Abstracts of Reports of County Societies—Continued.

Counties.	President.	Post-office.	Vice-President.	Post-office.	Treasurer.	Post-office.
Highland	C. S. Bell	Hillsborough	Hon. J. H. Jolly	Highland	A. S. Glassecock	Hillsborough.
Hocking	Col. C. Clowe	Logan	Wilford Stiers	Logan	John Crawford	Logan.
Holmes	George F. Newton	Millersburg	John Duncan	Millersburg	C. S. Vorwerk	Millersburgh.
Huron	J. C. R. Eastman	Norwalk	C. S. Brown	Ridgefield	C. W. Flinn	Norwalk.
Jackson	Green Thompson	Jackson C. H.	Moses Hayse	Jackson C. H.	Harman Bunn	Jackson C. H.
Jefferson	No organization.					
Knox	Robert Miller	Mount Vernon	Noah Boynton	Mount Vernon	John D. Thompson	Mount Vernon.
Lake	John Warren	Mentor	George Blish	Concord	Horace Steele	Painesville.
Lawrence	Cyrus Ellison	Ironton	Thomas Ahlmepey	Ironton	James M. Kelley	Ironton.
Licking	Joseph White	Newark	William Seymour	Newark	David Smith	Newark.
Logan	D. W. Harris	De Graff	C. Folsom	Zanesfield	E. L. Baird	Bellefontaine.
Lorain	Charles S. Mills	Eaton	Richard Baker	Elyria	C. W. Johnston	Elyria.
Lucas	R. C. Thompson	Sylvania	E. Upton	Toledo	W. C. Earl	Toledo.
Madison	No organization.					
Mahoning	Richard Fitch	Ellsworth	J. H. Shields	Boardman	J. W. Canfield	Canfield.
Marion	Peyton Hord	Marion	George Retterer	Marion	Isaac Young	Marion.
Medina	Gaylord Thompson	Medina	John Pearson	Mallett Creek	S. B. Woodward	Medina.
Meigs	Abner Stout	Chester	William H. Mease	Pomeroy	W. H. Lesley	Pomeroy.
Mercer	G. W. Randaubaugh	Neptune	E. M. Piper	Celina	Abner Davis	Celina.
Miami	William B. McClung	Columbus	N. Smithers	Troy	F. L. Harter	Troy.
Monroe	A. B. Covert	Antioch	William Reed	Woodsfield	W. T. Morris	Woodsfield.
Montgomery	N. Ohmer	Dayton	Marcus Kells	Dayton	James Applegate	Dayton.
Morgan	James A. McConnell	McConnellsville	Edwin Sherwood	McConnellsville	F. M. Kahler	McConnellsville.
Morrow	D. S. Talmadge	Mount Gilead	Isaac Lefever	Mount Gilead	W. W. McCracken	Mount Gilead.
Muskingum					Jeff. Van Horne	Zanesville.
Noble	John M. Round	Summerfield	Benjamin Bory	Sarahsville	William M. Stewart	Sarahsville.
Ottawa	J. P. Lattimore	Port Clinton	John Jenny	Elmore	Chris. Vogle	Oak Harbor.
Paulding	W. H. Snook	Paulding	R. M. Reid	Reid's	Coe Gordon	Paulding.
Perry	Edward Rose	New Lexington	Charles Carter	Oakfield	Joel Fink	East Rush Creek.
Pickaway	V. F. Decker	Lockbourne	L. E. Scoville	Circleville	N. J. Turney	Circleville.
Pike	No organization.					
Portage	Peter H. Bean	Ravenna	E. P. Brainard	Ravenna	E. R. White	Ravenna.
Preble						
Putnam	William Blodgett	Ottawa	L. N. Crayfis	Ottawa	S. P. Weaver	Ottawa.
Richland	W. S. Hickox	Mansfield	J. H. Cook	Mansfield	M. E. Douglas	Mansfield.

* Deceased.

Ross.....	L. G. Delano.....	Chillicothe.....	S. H. Hurst.....	Chillicothe.....	Addison Pearson.....	Chillicothe.....
Sandusky.....	William E. Haines.....	Fremont.....	Oscar Ball.....	Fremont.....	John M. Smith.....	Fremont.....
Scioto.....	No organization.....	Tiffin.....	Samuel Herrin.....	Eden.....	O. C. Zeller.....	Tiffin.....
Seneca.....	William H. Gibson.....	Sidney.....	Morris Honnell.....	Sidney.....	S. E. Mathers.....	Sidney.....
Shelby.....	J. R. Kendall.....	Canton.....	J. G. Kieth.....	Canton.....	George D. Harter.....	Canton.....
Stark.....	J. H. Bair.....	Copley.....	Dennis Treat.....	Talmadge.....	John H. Chisty.....	Akron.....
Summit.....	James Hammond.....	Warren.....	H. B. Perkins.....	Warren.....	A. D. Webb.....	Warren.....
Trumbull.....	Harmon Austin.....	Canal Dover.....	J. T. Welty.....	Canal Dover.....	George B. Deardorff.....	Canal Dover.....
Tuscarawas.....	S. Harcourt.....	Marysville.....	George Sinclair.....	Milford Center.....	Jas. A. Henderson.....	Marysville.....
Union.....	Philip Snyder.....	Van Wert.....	J. L. Clark.....	Van Wert.....	A. W. Baker.....	Van Wert.....
Van Wert.....	N. Hattery.....	Lebanon.....	.....	.....	Robert Boake.....	Lebanon.....
Vinton.....	No organization.....	Marietta.....	D. T. Brown.....	Marietta.....	C. K. Leonard.....	Marietta.....
Washington.....	George W. Carey.....	Apple Creek.....	David Thomas.....	New Pittsburgh.....	John Hindman.....	Wooster.....
Wayne.....	W. F. Curtis.....	Bryan.....	S. B. McKeloy.....	Bryan.....	J. W. Nelson.....	Bryan.....
Williams.....	Cornelius Smith.....	Perryburgh.....	.....	.....	Martin Warner.....	Tontogany.....
Wood.....	E. J. Evans.....	Upper Sandusky.....	C. Berry, Jr.....	Upper Sandusky.....	Jacob Jurnal.....	Upper Sandusky.....
Wyandot.....	James W. Ross.....	.....	.....	.....	.....	.....
	McD. M. Carey.....	.....	.....	.....	.....	.....

Abstracts of Reports of County Societies.—Continued.

Counties.	Secretary.	Post-office.	Time of Fair.	Place of Fair.	Potato Bugs.
Adams	G. W. Overmyer	Lima	September 21, 22, 23	Lima	Potato bugs.
Allen	W. G. Helpman	Ashland	No fair in 1871 .....	.....	No potato bugs.
Ashland	E. J. Betts	Jefferson	September 19, 20, 21 .....	.....	Potato bugs.
Ashtabula	J. M. Goodspeed	Athens	October 5, 6	Athens	Potato bugs.
Athens	O. T. Dicker	Wapakonetta	October 4, 5, 6	Wapakonetta	Potato bugs.
Anglaize	Aleniz Cope	St. Clairsville	September 27, 28, 29	St. Clairsville	Potato bugs.
Belmont	Wm. Hays	Georgetown	September 5, 6, 7, 8	Georgetown	Potato bugs.
Brown	W. R. Cochran	Millville	October 3, 4, 5, 6	Hamilton	Potato bugs.
Butler	Thos. Hays	Carrollton	September 26, 27, 28	Carrollton	Potato bugs.
Carroll	W. A. Humes	Urbana	September 12, 13, 14, 15	Urbana	Potato bugs.
Champaign	Quincy A. Petts	Springfield	September 5, 6, 7, 8	Springfield	Potato bugs.
Clarke	W. E. Mears	Milford	September 12, 13, 14, 15	Boston	Potato bugs.
Clermont	Levi Mills	Wilmington	September 6, 7, 8	Wilmington	Potato bugs.
Clinton	J. F. Benner	New Lisbon	September 20, 21, 22	New Lisbon	Potato bugs.
Columbiana	L. L. Cantwell	Coshocton	September 12, 13, 14, 15	Coshocton	Potato bugs.
Coshocton	Geo. Keller	Bucyrus	October 3, 4, 5, 6	Bucyrus	Potato bugs.
Crawford	A. B. Chamberlin	Cleveland	October 3, 4, 5, 6	Cleveland	Potato bugs.
Cuyahoga	J. T. Martz	Greenville	October 3, 4, 5, 6	Greenville	Potato bugs.
Darke	Chas. P. Tittle	Defiance	October 3, 4, 5, 6	Defiance	Potato bugs.
Defiance	Fred. M. Joy	Delaware	October 3, 4, 5, 6	Delaware	Potato bugs.
Delaware	S. M. White, Jr.	Sandusky	October 3, 4, 5, 6	Sandusky	Potato bugs.
Erie	John G. Reeves	Lancaster	October 11, 12, 13, 14	Lancaster	Potato bugs.
Fairfield	J. B. Priddy	Washington C. H.	August 22, 23, 24, 25	Washington C. H.	Potato bugs.
Fayette	C. S. Glenn	Columbus	September 5, 6, 7, 8	Columbus	Potato bugs.
Franklin	H. L. Moreley	Wauseon	September 27, 28, 29	Wauseon	Potato bugs.
Fulton	John C. Vanden	Gallipolis	October 4, 5, 6	Gallipolis	No potato bugs.
Gallia	H. C. Tuttle	Burton	September 13, 14, 15	Burton	No potato bugs.
Geauga	J. B. Carruthers	Xenia	September 12, 13, 14, 15	Xenia	Potato bugs.
Greene	C. B. Hutchison	Cambridge	September 21, 22	Cambridge	Potato bugs.
Guernsey	Richard T. Durrell	Cincinnati	September 5, 6, 7, 8, 9	Cincinnati	Potato bugs.
Hamilton	D. B. Beardsley	Findlay	October 5, 6, 7	Findlay	Potato bugs.
Hancock	L. M. Strong	Kenton	September 13, 14, 15	Kenton	Potato bugs.
Hardin	Jacob Jarvis	Cadiz	October 4, 5, 6	Cadiz	No potato bugs.
Harrison	A. H. Tyler	Napoleon	September 20, 21, 22	Napoleon	Potato bugs.
Henry .....	.....	.....	.....	.....	.....

Highland	John W. Ellis	Hillaboro	September 4, 5, 6	Potato bugs.
Hooking	H. L. Wright	Logan	October 5, 6, 7	Potato bugs.
Holmes	Baldwin Herzer	Millersburg .....	.....	Potato bugs.
Huron	Wm. B. Woolverton	Norwalk	September 19, 20, 21	Potato bugs.
Jackson	Jacob A. Sells	Jackson C. H.	September 27, 28, 29	Potato bugs.
Jefferson .....	.....	.....	.....	.....
Knox	Ghas. E. Critchfield	Mt. Vernon	September 26, 27, 28	No potato bugs.
Lake	D. W. Mead	Painesville	September 27, 28, 29	Potato bugs.
Lawrence	Thos. I. Murodok	Ironton	No fair in 1871	No potato bugs.
Licking	I. W. Bigelow	Newark	October 3, 4, 5, 6	Potato bugs.
Logan	E. J. Hoventine	Bellefontaine	October 3, 4, 5, 6	Potato bugs.
Lorain	Geo. F. Metcalf	Elyria	September 19, 20, 21, 22	Potato bugs.
Lucas	Foster R. Warren	Sylvania	September 19, 20, 21, 22	Potato bugs.
Madison .....	.....	.....	.....	.....
Mahoning	F. W. Beardsley	Canfield	October 3, 4, 5	No potato bugs.
Marion	B. F. Stall	Marion	September 6, 7	Potato bugs.
Medina	N. H. Bestwick	Medina	October 11, 12, 13	Potato bugs.
Meigs	E. S. Branch	Pomeroy	September 13, 14, 15	Potato bugs.
Mercer	John Milligan	Celina	September 21, 22, 23	Potato bugs.
Miami	S. R. Drury	Troy	October 4, 5, 6, 7	Potato bugs.
Monroe	David Okey	Woodfield	September 20, 21, 22	No potato bugs.
Montgomery	Anthony Stephens	Dayton	September 6, 7, 8	Potato bugs.
Morgan	John S. Adair	McConnellsville	September 27, 28, 29	Potato bugs.
Morrow	E. C. Chase	Mt. Gilead	September 26, 27, 28	Potato bugs.
Muskingum .....	.....	.....	.....	.....
Noble	James Danford	Sarahsville	September 20, 21, 22	No potato bugs.
Ottawa .....	.....	.....	.....	.....
Pandling	G. W. Cox	Port Clinton	September 20, 21, 22	Potato bugs.
Perry	Thos. P. Skinner	Paulding .....	.....	Potato bugs.
Pickaway	A. R. Van Cleaf	Rehoboth	October 4, 5, 6	Potato bugs.
Pike .....	.....	Circleville	September 19, 20, 21, 22 .....	.....
Portage .....	.....	.....	.....	.....
Preble	John Mcnary	Ravenna	September 25, 26, 27	No potato bugs.
Putnam	Geo. D. Kinder .....	.....	.....	.....
Richland	J. W. Myers	Ottawa	September 27, 28, 29	Potato bugs.
Ross	P. G. Griffin	Mansfield	September 19, 20, 21, 22	Potato bugs.
Sandusky	Wm. H. Andrews	Chillicothe	September 10, 11, 12, 13	Potato bugs.
Scioto .....	.....	Fremont	October 4, 5, 6, 7	Potato bugs.
Seneca	U. F. Cramer	Tiffin	October 10, 11, 12, 13	Potato bugs.
Shelby	Hamlin Blake	Sidney	September 19, 20, 21, 22	Potato bugs.
Stark	John F. Clark	Canton	September 26, 27, 28, 29	Potato bugs.
Summit	S. H. Pitkin	Akron	October 3, 4, 5, 6	No potato bugs.

Abstracts of Reports of County Societies—Continued.

County.	Secretary.	Post-office.	Time of Fair.	Place of Fair.	Potato Bugs.
Trumbull.....	H. F. Austin.....	Leavittsburg.....	September 19, 20, 21.....	Warren.....	Potato bugs.
Tuscarawas.....	E. S. Slingluff.....	Canal Dover.....	October 3, 4, 5, 6.....	Canal Dover.....	Potato bugs.
Union.....	L. Piper.....	Marysville.....	October 3, 4, 5, 6.....	Marysville.....	Potato bugs.
Van Wert.....	L. H. Robinson.....	Van Wert.....	September 15, 16.....	Van Wert.....	Potato bugs.
Vinton.....	.....	.....	.....	.....	.....
Warren.....	Edward Warwick.....	Lebanon.....	September 20, 21, 22.....	Lebanon.....	Potato bugs.
Washington.....	J. Palmer, Jr.....	Marietta.....	September 20, 21, 22.....	Marietta.....	Potato bugs.
Wayne.....	Isaac Johnson.....	Wooster.....	October 3, 4, 5.....	Wooster.....	Potato bugs.
Williams.....	Robert N. Patterson.....	Bryan.....	September 19, 20, 21.....	Bryan.....	Potato bugs.
Wood.....	Geo. Powers.....	Perrysburg.....	October 4, 5, 6.....	Tontogany.....	Potato bugs.
Wyandot.....	A. Kall.....	Upper Sandusky.....	October 11, 12, 13.....	Upper Sandusky.....	Potato bugs.

Abstracts of Reports of County Societies—Membership, Entries, Receipts, and Disbursements.

Counties.	Number of members.	Number of entries.	Receipts.	Disbursements.
Adams				
Allen	218	554	\$966 67	\$856 47
Ashland			897 69	866 57
Ashtabula			1,931 62	1,904 80
Athens			1,592 62	1,027 56
Auglaize	479	475	1,033 40	
Belmont	399	905	1,470 00	1,322 00
Brown		1,377	2,388 25	359 70
Butler		2,961	6,018 40	6,159 14
Carroll	605		1,850 55	
Champaign	150		3,105 94	2,946 59
Clarke	402		3,307 82	2,963 59
Clermont	730	2,039		
Clinton	1,200		2,096 45	1,869 57
Columbiana		1,406	3,798 45	3,152 29
Coshocton	650		3,339 34	3,140 10
Crawford	592		3,529 84	3,529 84
Cuyahoga			1,002 70	929 75
Darke	1,132	1,616	4,613 29	5,987 39
Defiance		1,700		
Delaware		1,667	3,753 26	3,507 08
Erie	1,230	2,431	7,140 44	2,770 09
Fairfield	1,651	1,043	6,252 91	5,572 01
Fayette			2,101 28	2,685 22
Franklin		2,000	18,007 77	17,934 48
Fulton	466	511	1,379 58	1,361 88
Gallia	83	356	981 35	821 06
Geauga	351	1,478	1,522 80	
Greene	800	1,829	1,765 57	2,054 00
Guernsey			303 53	316 43
Hamilton	778			
Hancock			3,131 90	3,013 39
Hardin				
Harrison				
Henry				
Highland			1,301 36	1,281 14
Hocking	484	548	1,331 44	1,283 32
Holmes				
Huron	300	912	1,983 96	
Jackson	423		1,068 35	804 65
Jefferson				
Knox	500	1,000		
Lake	733			
Lawrence				
Licking	1,269	3,800	20,930 69	21,992 13
Logan	1,400	920	2,502 14	
Lorain	585	1,113		
Lucas	305	975	5,615 79	5,761 87
Madison				
Mahoning	600	1,322	2,875 26	2,501 57
Marion	495		4,589 63	4,116 34
Medina	478		1,146 33	
Meigs	450	452	2,111 19	2,501 51
Mercer				
Miami	280	977	4,465 53	2,497 36
Monroe	158		1,028 90	880 34
Montgomery	300	455	1,622 16	1,622 16
Morgan	783	1,005	2,680 13	2,283 77
Morrow	234		1,937 97	1,835 05
Muskingum			1,941 21	1,941 21

Abstracts of Reports of County Societies—Continued.

Counties.	Number of members.	Number of entries.	Receipts.	Disburse- ments.
Noble	204	.....	\$452 35	.....
Ottawa	210	460	339 45	\$339 45
Paulding .....	.....	.....	.....	.....
Perry	600	.....	.....	.....
Pickaway .....	.....	.....	3,315 26	2,724 38
Pike .....	.....	.....	.....	.....
Portage	110	.....	992 89	992 89
Preble	1,750	3,200	3,043 49	2,944 11
Putnam	318	603	743 06	1,122 42
Richland	96	600	4,510 31	4,862 48
Ross	300	1,264	.....	.....
Sandusky	1,002	1,560	7,710 66	7,408 17
Scioto .....	.....	.....	.....	.....
Seneca	261	.....	7,204 10	8,194 73
Shelby .....	.....	.....	.....	.....
Stark .....	.....	1,152	19,735 12	20,332 32
Summit	1,170	1,454	4,538 04	.....
Trumbull	1,713	1,302	4,121 67	3,901 84
Tuscarawas .....	.....	.....	.....	.....
Union	1,093	.....	3,093 94	3,133 12
Van Wert	314	.....	842 39	685 53
Vinton .....	.....	.....	.....	.....
Warren .....	.....	1,063	3,381 07	3,353 38
Washington	318	.....	6,411 28	6,374 87
Wayne	269	.....	2,681 82	1,832 93
Williams	603	1,468	2,127 00	1,909 68
Wood	483	1,000	1,169 13	1,114 88
Wyandot	376	.....	1,536 80	1,188 36

REPORTS OF COUNTY SOCIETIES.

ALLEN COUNTY.

Our Fair was held in Lima, September 21st, 22d, and 23d, A. D. 1871. The attendance was not what the friends of the Society desired, but the exhibitions of horses, cattle, sheep, and hogs by far surpassed any previous exhibition, especially in quality. All the departments were well represented. Membership, 218; total number of entries, 554; total amount of premiums awarded, \$449.50.

The crops in our county for 1871 were above the average. Wheat, in some localities, was stricken with rust, but generally was good. Corn was very good. Potatoes were much better than was expected. The Colorado bug made its appearance early in the season, but was not as destructive as in some other localities. The fruit-crop was not up to the average.

ASHTABULA COUNTY.

The twenty-fifth annual Fair of this Society was held on their grounds at Jefferson, September 19, 20, and 21, 1871. Number of members, 293; number of entries, 1,300. It was generally conceded that this was the best Fair that we had had for many years. The different departments were all well filled. The show of Short-horn cattle was large and excellent, and a very prominent item in the exhibition. All stock was kept upon the grounds during all days of the Fair, and added largely to the interest, and was a decided improvement on the former practice of permitting the cattle and all stock, except horses, to be taken from the grounds on the second day of the Fair. The exhibition in the Hall, as usual, was very large, and was mostly made up of articles the handiwork of the ladies, who have always manifested great interest in the Society, and by their labor and zeal have contributed their full share in securing its prosperity. The vegetable department and show of samples of farm-crops was excellent; and it is very difficult to see wherein one department excelled another, all being well filled. The Society is in a prosperous condition, has fair-grounds of twenty acres, situate within the corporate limits of Jefferson, and is owing about \$1,200, as against \$3,500, the indebtedness in 1867. The buildings are very good, and the grounds in very good condition, yet the main effort during the past few years has been to pay up the indebtedness, incurred about five years ago in purchasing and improving new grounds; and the improvements and repairs now needed the Society will be abundantly able, and will be ready to make.

The farm-crops of the past season were good, and the dry weather in sections adjacent to the county did not materially affect any crop in this county, except that it may have injured somewhat the fall growth of the wheat-crop. The Colorado potato-bugs made their appearance in some parts of the county, but did no damage, as but few of them came. The fruit-crop was light, especially the crop of apples. Premiums awarded in 1871, \$652.95.

ATHENS COUNTY.

The twenty-first annual exhibition of Athens County Agricultural Society was held at Athens, Ohio, on the 5th and 6th days of October. The attendance was larger than at any time previous. There was a fine display in all the departments, and the competition was lively. The horses, mules, cattle, sheep, and hogs exhibited indicate that the people of Athens county are fully alive to the importance of the improvement of their stock. The wheat and corn was better than usual; apples and peaches, hardly an average crop; oats, about average; potatoes, a good crop; grass, very light. There was no competition in field-crops. Number of members this year, 300.

The summer, fall, and winter, thus far, have been very dry. At no time since the 1st of June has the ground been wet. Farmers have found it difficult to obtain water for stock. The fall months were favorable for securing the corn, and the mild pleasant weather, surpassing anything our farmers have experienced for years, has been favorable for feeding purposes:

AUGLAIZE COUNTY.

The eighth annual Fair of our county was held at the fair-grounds of the Society at Wapakonetta, Ohio, on the 4th, 5th, and 6th days of October, A. D. 1871. The number of entries in the different classes were as follows:

Horses, 82; fast-ring, 12; mules and jacks, 7; cattle, 30; sheep, 14; swine, 30; poultry, 8; agricultural-implements, 24; mechanics and artificers, 44; domestic articles, 50; factory goods, 2; wines and cider, 5; fruits, 30; dairy, 22; grain and fruits, 29; vegetables, 29; canned fruits, 38; flowers and plants, 17; family of cattle, 2. Total, 475.

The exhibition of cattle, horses, and swine was good; sheep, moderately. The number of entries exceed any former year, and a more determined effort was never made to make our Fair a success, both as to the members and exhibitors, as the show in all departments was good, and the receipts are in excess of former years some \$300. The Society expended this year some \$700, for additional grounds, fencing, and stalls, and with this addition will only have an indebtedness of about \$350. The receipts, as shown by the Treasurer's report for 1871, amount to \$1,033.40. The Society has four hundred and seventy-nine members.

The principal crops were corn, wheat, oats, hay, potatoes, and apples, the latter being a poor crop; average, corn, 45 bushels per acre; wheat, 17; oats, 45; hay, 1½ tons per acre; potatoes, a good yield, 80 bushels per acre, the first crop raised for six years; and this is worthy of note, for in early spring the farmers were anticipating the return of the Colorado bug, but they went in with a nerve, planting largely, and making preparations to make war on the bugs, their common enemy, which they did almost to extermination, and their efforts were crowned with success, for potatoes sold in our market for 40 cents per bushel. There was some alarm as to the chinch bug, but the great army did not arrive in time to do any very material injury, but we have some apprehensions as to what they may do the coming year; but we will put our trust in the right direction, and not borrow trouble about the future.

The most permanent improvement in our county is in the reclaiming of our swamp-lands, in the eastern part of our county. Muchenippie Prairie, where three years ago, using the nominative case, I have waded in water two feet deep in the swamp, hunting geese and ducks, this year, by their former efforts in ditching, will produce about 125,000 bushels of corn. There has been forty-one miles of ditching done within the last two

years, under the supervision of the county commissioners, which is a great work, and generally gave good satisfaction. Underdraining is yet in its infancy, but is receiving a good deal of attention from our land-owners. We have three tile-machines in the county doing a good business.

The report on field crops is not very complete. Premium was awarded to Philip Reed on the best yield of corn per acre, 125 bushels and 50 pounds, 70 pounds per bushel. George W. Burke received the premium on wheat, 30 bushels and 10-11 of a bushel per acre, drilled in on corn-stubble.

There is one part of the show that I had likely to have omitted, there being quite a number of our members Nimrods, though not of the sons of Cush, nor neither mighty hunters before the Lord, but goodly hunters among men, and who all feel an interest in the game-laws of Ohio, and an interest generally in that kind of sporting, who had a very fine show of breech-loading guns on exhibition, all of American manufacture.

BELMONT COUNTY.

The annual fair of the Belmont County Agricultural Society was held at St. Clairsville, on the 27th, 28th and 29th days of September. The exhibition was good, the weather the first two days being quite cold and the attendance moderate. The third day the attendance was quite large. The exposition in the aggregate was creditable and showed no falling off in any of the departments. The whole number of entries was 905. The entry of horses exceeded that of any other class.

There are two other fairs in the county, and our county seat not having railroad facilities we can only command a local patronage.

It was necessary this year to have a number of expensive repairs made, which absorbed nearly fifty per cent. of our receipts, leaving us unable to pay our premiums in full, and the Board acting upon the principle that it is wise to keep out of debt, decided to pay a dividend of 60 per. cent. on premiums.

The number of members is 399, which is a falling off from last last year, but few except exhibitors becoming members.

The year just closed has been most propitious for the farmers of our county, every department of husbandry being amply rewarded. The weather was unusually favorable for the growth and maturing of crops of all kinds.

The crop of wheat is not so large as last year, but the quality is good; will average 17 to 18 bushels per acre.

Oats and corn are excellent crops; will average 50 bushels per acre. Fewer nubbins by one-half than usual.

Potatoes, a large crop and of good quality; received no damage from the potato bug or rot. Hay and barley an average crop. Apples, a small crop and rotting very fast. Pears and peaches an average crop. Grapes, a full crop, their cultivation being rather on the decrease.

Fruit, especially the apple, is becoming quite a lucrative branch of industry.

The cultivation of flowers receives much attention; they were a beautiful feature at our late fair, for which the ladies deserve much credit.

There was no competition on farm crops during last year.

There cannot be much said in regard to the improvement of agriculture in the county for the last year. There is, perhaps, some progress and some advancement among the farmers in social position and prosperity. Money matters are easy with them, and, as a

class, they are but little involved. Taking the entire farming interest, it will compare favorably with any other in this respect.

The "Farmers' Club" has not succeeded in our county. Much good might be done if the farmers and manufacturers would hold a yearly convention, to discuss the general interests of the county. Such discussions would elicit valuable information.

BUTLER COUNTY.

The twentieth annual fair of the Butler County Agricultural Society was held on their fair grounds on the regularly fixed time—commencing on the first Tuesday of October, 1871, and closing the ensuing Friday.

The weather being all that could be wished for, and all the halls and "rings" being in full trim, the fair was, as it has ever heretofore been, an entire success.

The following will fully exhibit the number of entries, and the amount of premiums awarded in the several departments of stock, of mechanical and agricultural industry, and of ornamental and fancy work:

1. Cattle	Entries, 155.....	Premiums, \$293 00
2. Horses	" 511.....	" 760 00
3. Swine	" 191.....	" 195 00
4. Sheep	" 104.....	" 130 00
5. Poultry	" 60.....	" 14 00
6. Agricultural Implements, &c. ..	" 217.....	" 301 00
7. Mechanics' Work	" 85.....	" 62 00
8. Domestic Works	" 183.....	" 79 00
9. Fancy do	" 171.....	" 92 00
10. Grain and Vegetables, &c. ..	" 304.....	" 79 00
11. Articles canned, preserv'd, &c. ..	" 551.....	" 141 00
12. Fruits, Flowers, &c.	" 348.....	" 160 00
13. Fine Arts and Ornamental ..	" 81.....	" 69 00
Total entries.....		2,961.....Premiums, \$2,375 00

The Society is now in debt, arising from the purchase of an additional 14 acres of land, found necessary for the enlargement of exhibition rings, and for the accommodation of its patronage and the necessary improvement of the new grounds; requiring an outlay of \$1,557 for the land and some \$1,800 for the lumber and fencing, and for the altering and repairing the grounds to suit the new order of things. But the grounds being now sufficiently large and requiring no further outlay for their improvement and repair for the next year or two, the Society fully relying upon the continued liberal support and patronage heretofore received from Butler and adjoining counties in Ohio, and of her sister States of Indiana and Kentucky, confidently anticipate their ability to pay off their present indebtedness, and promptly to meet any and all necessary demands upon the treasury.

All the different classes of stock were in full exhibition at our fair, and much over their usual standard.

All the different branches of agricultural, mechanical and manufacturing industries were fully represented in the fair, and showed a still increasing improvement and progress in each of their departments.

The crops of wheat, corn and barley are not more than an average; the fruit crops

considerably over an average, both in quality and quantity; the small fruits, roots and vegetables never better or more plentiful.

Butler county being well supplied with facilities of transportation by way of the Miami canal, and her several railroads branching at Hamilton, her surplus crops of wheat in shape of flour, and corn in shape of pork, find ready market, both north and south; and being furnished with fine water-power by the Miami river and branches, and the Miami canal and hydraulics, there are a large number of flouring-mills, paper-mills, foundries, machine-shops, and other manufacturing establishments, at Hamilton, Middletown, Woodsdale, etc., thus employing a large proportion of consumers, affords a good and ready market for much of her surplus crops, small fruits, vegetables and other market products.

The general characteristic of the season has been dry and changeable—certain localities suffering from drought to their crops and want of water for their stock; while other localities within the county suffered no inconvenience in either respect.

The most destructive insects have been the cut-worm, upon the corn, upon sod and stubble grounds, and the Colorado bug upon the potato crop; both considerably injuring each crop, and in some—and that not a few—instances destroying the entire crop.

The wheat crop, although an average throughout the county, was in many localities cut short in the yield by the head being short and only partially filled, and the grain small at that; for the cause of which there are several conjectures by old and observing farmers; by some, supposed to be caused by heavy falls of rain while the wheat was in blossom, and by others, by a severe frost shortly before the shooting of the head, injuring and destroying the germ; and one or the other is most probable, from the fact that a field of wheat in blossom, or in a very forward state, would be badly injured, while another field adjoining, but not so forward, would not be so affected.

Such being a short and very imperfect sketch of the various material interests and industries of our county, it might be of interest, if within the scope of this report, to show a corresponding progress in intellectual and moral improvement.

This report being the last the writer will have the honor of making, naturally recalls to recollection the first founding and origin of this Society, now full forty years ago, with other kindred associations of pleasing yet melancholy interest. The men who at that time bore a hand in organizing and managing the Society, are now passing off like the shadow from the dial. But such is human life. One generation goeth and another cometh. The men who thirty or forty years ago filled all the various stations of active and busy life, having served their day and generation, now sleep with their fathers, and another generation has arisen that know them not. But, behold you the wonders that they have performed—the very miracles they have achieved in that short time! They have changed the desert and waste places into fruitful and smiling fields; they have made roads and pikes that intersect the whole land; they have built the towns and cities, and adorned and enriched them with structures of beauty and works of art; they have founded and built schools, colleges and churches; they have built her canals, from river to lake, and her railways, from the rivers to the uttermost ends of the earth; and as the *ne plus ultra* of finite power and mind, they have laid and stretched the electric cable, that flashes intelligence around the globe with the speed of the thought itself. From this now almost departed race of men have arisen physicians and lawyers, orators and statesmen, and scholars and divines, as able and distinguished as ever went forth to adorn and dignify and bless mankind.

BROWN COUNTY.

The Twenty-second Annual Fair was held at Georgetown, September 5th, 6th, 7th and 8th, 1871. The weather was unusually favorable. The attendance was greater than at any former exhibition; it seemed that the entire agricultural and mechanical elements in this section were thoroughly aroused, and the energies of the people, both great and small, employed in a united effort to make this the most agreeable and interesting social reunion in the history of our fairs; and such it proved to be, being harmonious throughout. This is attributable, in a great measure, to the citizens of Georgetown and vicinity, whose doors of hospitality were wide open on this occasion. The prospect of the Society's usefulness is flattering. Denominated a County Fair, it might, with propriety, be termed a World's Fair, as its rules imply, excepting field crops. Being located near the border, we receive a liberal patronage from Kentucky; being but one remove from the Blue Grass region, valuable horses and cattle are introduced.

The Society is in a prosperous condition to such an extent that, unless an extension of ground is obtained, it will become absolutely necessary to procure another site, which, in the opinion of the Board, the interests of the Society demands. We have every facility requisite to holding a fair, excepting a little more elbow room and railroad, which is under contemplation. Give us the Chesapeake Road, and we will become a model of excellence.

Prosperous as we have been, by death the Board has been deprived of three of its most useful members—Mr. J. G. Cochran, Col. C. B. White, and Maj. Wm. Hayes, Secretary, whose services were invaluable. This is not penned nor meant in an obituary sense; but when a calamity such as this befalls the Board, depleting its numbers nearly one-half, the agricultural tongue of history should not keep silent, nor its pen fail to record this sad event.

The principal crops are corn, averaging 30 bushels per acre; wheat, averaging 10 bushels per acre; rye, barley, oats, buckwheat, potatoes, grapes and tobacco. Potatoes considerably injured by potato bug. Considerable hay made—nearly an average crop. The season was remarkably dry; notwithstanding the crops compare favorably with any preceding year.

CARROLL COUNTY.

The twenty-first annual Fair of the Carroll County Agricultural Society was held on the Fair Grounds, on the 26th, 27th, 28th and 29th days of September, 1871.

In submitting the annual report, we are pleased to be able to state, that there has been great improvement in the financial condition of the Society. When the present Board took charge of the Society, it was largely in debt, and without the necessary buildings on the ground for conducting the Fair. This old indebtedness has been paid off, new buildings have been erected at a large expense, and the Society is almost clear of debt. Two years ago we abolished the system of admitting persons to the ground with a family ticket, and since that our receipts have been almost double.

The receipts this season were \$1,850.55. Total number of members of the Society, 605.

The principal crops raised in this county are wheat, corn, rye, oats, potatoes, clover-seed and hay, which were all good, with the exception of the hay crop; it was damaged with

late spring frosts and dry weather. The fruit crop was excellent. Apples and peaches were abundant, particularly the former.

The "Colorado potato bug" made its appearance in this county this season, but did no particular harm.

There was but one competitor on field crops.

CHAMPAIGN COUNTY.

In conformity to law, herewith is submitted the report of the Champaign County Agricultural Society for 1871. No applications were made for premiums on field crops, and therefore we have no statements to furnish you with.

The annual meeting of our Society is held the second Saturday after the annual meeting of the State Board. At our meeting in January last, a great interest was manifested and a larger number attended than at any previous meeting of the Society. The Society had been working under the same Constitution for a long time, and the progressive element of it wished and succeeded in changing the fee for membership from \$1.50 to \$1.00, and allowed no person to become a member after the 1st day of June, and each person not having a member's ticket was required to pay 25 cents for each admission to the grounds during the Fair. This of course diminished the number of members very much; and the time being thus limited, but one hundred and fifty persons procured members' tickets within the time prescribed. Whether this operated against the people attending the Fair or not, is a question which we are not prepared to answer.

Our Fair was held on the 12th, 13th, 14th and 15th days of September, which was a month earlier than ever before. Though not so great a success as heretofore, the Board, after looking at the combination of circumstances that operated against the Fair, were very well satisfied to find the treasury only about six hundred dollars short. The weather was bad, and made it unpleasant to be on a fair-ground for pleasure. The change in the price of admission—the scarcity of money with the people—the farmers being busy getting in their wheat and arranging to attend the State Fair—all of these causes operated against our Fair this season; but had our Board curtailed the premium list instead of adding three hundred dollars to it, or had they not have improved the grounds with new buildings, stalls, etc., amid all these circumstances they would have had a surplus now. But our people are wide awake, and propose to sustain our Fair as they have done for twenty-one years. Our Board have a clause in their by-laws, "that, if the proceeds of the Fair are not sufficient, after paying current expenses, to pay the premiums in full, a pro rata distribution will be made." But though we were short six hundred dollars, our Board borrowed the money and paid all the premiums awarded, in full, that were called for within the time prescribed by their laws for paying the same, namely, thirty days after publication. All not called for within that time were deemed forfeited to the Society, which was a very small amount.

While the receipts at our Fair were not so large as last year, competition in every department was fully equal to any former exhibition. The tables in Product Hall were loaded down with all kinds of grains and vegetables. Samples of wheat, corn and oats were in abundance; the great ears of corn were corded up like wood; samples of wheat were by the bushel. We had not any new varieties, however, from those shown last year; the principal were the "Egyptian" and "Red Mediterranean." The grain was

plump but not large. The oats and rye exhibited were all of an inferior quality—not well matured from some cause. Fruits of every description loaded the tables. Apples, pears and grapes, from more than fifty orchards, were represented. While the apples exhibited signs of rot, being more or less imperfect in shape, the pears were the finest ever exhibited at our Fair, both in variety and quality. A large collection of plums were exhibited by Mr. J. D. Kirkpatrick. Some time before our Fair we visited his orchard. There is nothing peculiar in its location from many other orchards in the neighborhood, except that the land may be more rolling. But the orchard is fenced in, and a large litter of pigs were kept and fed therein, they eating all of the decayed fruit as it fell and was shaken off. Mr. K. has tried this for three years, and is fully convinced that this is the only way he can guard successfully against the curculio and insure him a good plum crop. We give this bit of information for the benefit of those who have plum trees and who do not realize any profit from them on account of the fruit being destroyed by the curculio. Mr. K.'s orchard contains a large number of the finest varieties of plums, and not one of his trees failed. The vegetable part of our exhibition was not so good as heretofore; effects of the drouth were visible in almost everything, and very few vegetables exhibited maturity.

The exhibition of stock entire compared favorably with any exhibition heretofore in quality; though in some departments the entries were fewer, yet an improvement in almost every department in breeding was perceptible. One hundred and two entries were made in the cattle-book—nearly all Short-horns; what were not, were Grades and Alderneys. Several fine herds of Short-horns were exhibited, and sharp competition was made. The horse department was fully up to its standard; all-work, draft and roadsters; but thoroughbreds seem to be almost entirely disappearing. Only four entries were made of thoroughbreds. This class, like fine-wooled sheep, has lost the confidence of our stock-breeders. The show of long-wools, viz., Cotswolds, Leicesters and Southdowns, was very creditable. Swine—to look at the pens, it seemed as if all our farmers had each turned out a drove. About two hundred hogs were exhibited—Poland and China, Magies and Berkshires; a few Chester Whites. A large lot of fine breeders were sold during the Fair. Our farmers are improving their stock of hogs, and are spending a great deal of money in doing so. Such a grand exhibition of swine was never before seen in Champaign county, nor have we ever seen such at any other county fair.

Domestic manufactures, both factory and home-made, made a fair show. Floral Hall was, as usual, the great attraction for our ladies. It was filled to its entire capacity with beautiful samples of ornamental and useful fabrics, which were sufficient evidence of the ingenuity and industry of our ladies. Fine Art Hall was well patronized; and never before has there been such a grand display of paintings and drawings exhibited at our Fair, and all were from the studios of our own artists. The condiment department was well represented; preserves, jellies, jams, pickles, etc., were in abundance.

One great feature of our Fair was the large display of agricultural implements. More than half an acre of space was covered by machines of the different kinds; besides, Mechanic Hall was well filled, and exhibited the presence of the Yankee. All in all, our people seemed to enjoy themselves and appreciate coming together in this agricultural way. It always seems a grand recreation for everybody to go to the county fair.

You ask us the peculiarities of the past season. We do not recollect any striking peculiarity, except the drouth. That was extensive, and cut short the average yield of almost every kind of grain.

The average yield of corn is estimated at thirty-three bushels per acre. Though the

yield is light, the quality of the corn is as sound as ever brought to market. The wheat crop is estimated at from fourteen to sixteen bushels per acre. Scarcely any rye was raised in our county. Potatoes were a short crop, and yet we saw the finest specimens ever raised in the county; but they were such as had grown on favored spots. No rot was observed. The sweet potato crop was extra good. Seldom have we seen such choice, rich sweet potatoes as were raised in our county this last year.

FRUIT.—The apple crop, in some localities, was very good, while in others it was a failure. The average crop was light, and on close examination it was difficult to find any perfect fruit; if not specked and deformed from the effects of the curculio, it was stunted by the drouth. We noticed a large number of orchards during the season that presented the appearance of having been fired or burned, the leaves being brown and scorched, and having the same appearance that the leaves will turn when the tree is dying in full leaf. The trees, however, recovered, and again came out full before fall. But the fruit in all of these cases was destroyed, where the trees presented the appearance above described.

The peach crop in some parts of the county was tolerably fair. The fruit, however, was imperfect, especially seedlings.

The grape crop was good—that is, they were not so abundant, but the quality of the fruit was well matured, and no signs of mildew.

Berries of all kinds were good, but the season with each was cut short on account of the dry weather.

CLARKE COUNTY.

The annual exhibition began on Tuesday, September 5th, and closed on Friday, September 8th, 1871. The exhibition was made a success in every particular, for which credit is largely due to the strenuous personal efforts of the Board of Directors, aided by the many warm friends of the Society. It was predicted that because of the location of the State Fair at Springfield, which exhibition was to follow that of the County Society within three weeks, it would be impossible for the local Society to hold a successful Fair during the year 1871. The contrary fact was demonstrated by experience. The number of entries exceeded the previous year, and the financial receipts were an increase of fully fifty per cent. An abstract from the Treasurer's report of the receipts and expenditures for the year 1871, is presented as follows:

Total receipts of Fair, 1871	\$2,905 82	
“ for membership	402 00	
		\$3,307 82
Premiums paid, 1871	\$1,640 50	
Other expenditures	1,323 09	
		2,963 59

The Society still preserves the policy of demanding an entry fee from exhibitors who are not members of the Society. As soon as the receipts will justify, a more liberal policy will undoubtedly be adopted in this respect.

Of the productions of Clarke county for 1871, the following is submitted: The corn crop was a full average yield. The wheat crop did not fall behind the year previous. Of oats the farmers harvested what they call a famous crop, which was above the average. Barley was poor in quality and an indifferent yield; very little attention is paid

to rye by the farmers of this county. Hay averaged a fair crop, something over a ton to the acre. The early potatoes were good and yielded about 200 bushels to the acre, but the late varieties were nearly a failure, suffering from the drouth and the ravages of bugs. The grapes are reported as nearly a failure. The interest among our farmers for improvement in their live stock continues unabated. During the past year considerable attention has been paid to the improvement of swine, and as a result, the display of swine at the last exhibition was never before equalled in this county.

The grounds of the Society now contain forty-six acres, and the building improvements are substantial and adapted to the wants of exhibitors in all the various departments. It is not an over-estimate to say that the grounds and buildings are worth about \$50,000. The finances of the Society are in an encouraging situation, notwithstanding it assumed, at a pecuniary sacrifice, the obligations entered into by the citizens of Springfield and the county, in order to secure the location of the State Fair in their midst for two years. All of these obligations were promptly met at maturity, and a receipt in full of all demands returned from the Treasurer of the State Board of Agriculture.

CLERMONT COUNTY.

This county held its twenty-third annual exhibition on the grounds of the Clermont County Agricultural Society at New Boston, (Owensville P. O.), September 12th, 13th, 14th and 15th, 1871. The weather was unpropitious, notwithstanding the show was the largest ever made in the county. The entries were as follows:

Horses, 261; mules, 44; cattle, 44; sheep, 41; swine, 28; poultry, 19; farm implements, 53; wheel carriages and machinery, 29; mechanics' manufactures, 11; farm products, 49; dairy and pantry products, 357; vegetable products, 260; fruits, 521; grains and seeds, 113; flowers, 163; domestic manufactures, 74; factory manufactures, 6; needle work, 80; fine arts, 22; non-enumerated, 64. Making an aggregate of 2,039 entries, on which were awarded 600 premiums, in sums ranging from 25 cts. to \$20, amounting to about \$1,100, distributed among all departments of industry. For detailed list of which see printed reports of Secretary and Treasurer herewith enclosed. There were no entries on field crops, hence no reports of competitors.

The Society is in a prosperous condition, holding frequent meetings of the Board for the transaction of business, owning 24 acres of ground adjoining the village of New Boston, with improvements thereon worth some \$4,000, and out of debt, except the bonds of the Society, which secures perpetual membership to about 100 persons.

The membership for the year 1871, numbers 730.

Our principal crops are hay, corn, oats, wheat, potatoes, rye, barley, buckwheat, apples, pears, peaches, grapes and berries. There is also considerable interest in the breeding of horses, mules, cattle, sheep and swine.

The season throughout has been much like the preceding, continuously dry, so much so as to exhaust hundreds of springs that have heretofore been reliable for a good supply of water. A severe frost on the 23d of April destroyed all our fruits in the valleys and low grounds, leaving the high range of hills uninjured. Destructive insects scarcely made their appearance, except in the single case of the Colorado Potato Bug, which, for a few days threatened destruction to all potato patches; but whether from the vigor with which they were attacked, front, flank and rear, or from some other cause, very little damage to the tuber was noticeable.

CLINTON COUNTY.

In presenting this annual report, we are gratified to inform your honorable Board that our Society is in a flourishing and prosperous condition, as will appear from the inclosed abstract of the accounts of our Treasurer, premium list, etc., having, as you will see, been able, in the last year, to pay off all of our liabilities, leaving a small surplus in the hands of our Treasurer. We had no competitors for premiums on crops the last year, although the exhibition for premiums on all classes of machinery, field crops, vegetables, live stock, etc., was unusually large, and far in advance, both in quantity and quality, of previous years. Our Society numbers twelve hundred members, and the prospects of its progress and success were never brighter than at present.

Our crops this year were generally good, making a good average yield; no particular injury done by insects. Thankful for our success in the past, we look forward with bright anticipations to the future, with renewed determination to push forward the work of agriculture in our county.

COLUMBIANA COUNTY.

The twenty-second annual exhibition was held on the grounds of the Society, at New Lisbon, on the 20th, 21st and 22d days of September, 1871. The Fair was a pleasant success in all its various departments, the friends of the Society realizing their most sanguine expectations. Disinterested parties judge the attendance on the second day the largest ever on the grounds. Through the urgent solicitations of friends and exhibitors, the Board were induced to make large improvements on the grounds, to accommodate some of the departments heretofore not well provided for. The Floral and Fruit Hall was enlarged to over three times its original capacity, giving it an area of over two thousand square feet. About one hundred and fifty new stalls were constructed for the protection and comfort of stock of the various kinds. The poultry department, heretofore not provided for, was supplied with a large number of comfortable coops. A water-tank, with the necessary appliance, was erected, holding over 2,500 gallons, which amply supplied the thirsty. In short, all the various needs of an exhibition of this kind were fully supplied, as far as possible.

The entries in the various departments were 1,406, on which \$1,125 in cash premiums was paid. The entries in the horse department were not quite so large as last year, yet exceeded it in excellence of stock; and if the Society would enlarge the present track, or provide a new one, the number of entries, and general interest in this department, would soon double.

The extra inducements and accommodations in the cattle department called out stock in quality not surpassed in this part of the State.

The sheep department, although not so well represented as during the *sheep fever* of a few years ago, is looking up again, and was well represented.

The show of swine was such as to make the lovers of this class of stock exhibit strong symptoms of the *hog fever*, and but for the low price of this commodity, very large accessions would be made to the wealth of the county in this direction.

The heretofore much neglected department of poultry, by a judicious management of the Board, was such that its most sanguine friends were agreeably disappointed, and proved to them and the community at large that we have amongst us those who love fine birds of this kind and know how to produce them.

The Agricultural and Machinery Departments were well filled with reapers, mowers, threshers, and all the necessities of the farming community.

The grain and vegetable tables groaned under their burthen of huge specimens of vegetation.

The Mechanics' Hall was filled to overflowing with specimens of rare skill and beauty. Huge mountains of bread, butter, canned and preserved fruits, loomed up on every side, showing that we have amongst us those who know how to contribute to the pleasures of life, as well as to fascinate the eye with all that is beautiful and lovely.

Large as was the Floral and Fruit Hall, it was filled to overflowing; about as much being under the tables as on them. The walls were thickly hung with beautiful specimens of the fine arts and costly decoration. It was thoroughly demonstrated that our people love the beautiful as well as the more substantial. The array of house plants and flowers was much larger and more gorgeous than any dared expect. The fruit, although the year was not propitious, still demonstrated that Columbiana county holds her old and enviable position as a fruit county.

There was but two entries of field crops, neither of which complied with the law, hence no premiums were awarded. This department is much neglected, and needs the fostering care of the Society.

Columbiana county has heretofore been rated almost exclusively as an agricultural county, but we have had it demonstrated, the past year, that our citizens are turning their attention to the raising of the various kinds of stock, and we are now having a much finer class of animals on exhibition than formerly, in fact would compare favorably with some of the much lauded stock counties.

The past year has rendered the fact patent to all, that our fair grounds are entirely too small to accommodate the exhibitor and visitor properly, and if the Society wish to prosper and improve, they must enlarge their grounds either by additions to the present or the purchase of a new, as expansion is impossible in the present condition; and it is an undeniable fact that advance must be the motto, or hopeless decay will surely follow.

As to the crops of the county, we would report wheat a fair average and excellent quality. Rye, an average, not much cultivated. Oats, above an average, and of full weight. Corn crop, large. Columbiana county has not been classed as a corn county, but of late years this staple has been cultivated to a much larger extent, yielding good returns and fair prices. We are but little disturbed by killing frosts, which leaves corn to be a steady crop. Potatoes, a large yield, and of excellent quality. The Colorado potato bug made its appearance in several places in the county last summer, but not in sufficient numbers to do much damage. Farmers and others should look well to this matter, or this crop will be destroyed next summer. Hay, fair crop, and gotten up in excellent condition. Apples were only a partial crop. Peaches, fair crop. A lively interest has been developed with reference to this crop, in consequence of a return of good prices. The peach tree appears now to be healthy. For years back peach trees did not flourish here, for some cause, and the cultivation of them was abandoned. But now thousands of trees are being yearly planted to swell the aggregate of this favorite fruit. Small fruits are looked after largely, and yield the cultivator ample returns.

As a county, we are in a healthful condition, and when its large mineral resources are fully developed, it will take its place in the front ranks of usefulness and enterprise.

COSHOCOTON COUNTY.

The twentieth annual fair of the Coshocoton County Agricultural Society was held on its fair grounds, September 12th, 13th, 14th and 15th, 1871. Although much annoyed by a heavy rain on the third day, the attendance and interest of our people far exceeded the most sanguine expectations of the officers. Our people manifest more than usual interest in stock. Entries in classes of horses numbered 159, among which there was a large display of fine stallions.

The entries on stock and farm products far surpassed former years. Our financial condition is good. The prospects and usefulness of our Society are flattering. Our grounds are located within the incorporated limits of Coshocoton, and are so small that we have much difficulty in accommodating our people on the grounds. It is hoped that the Board will purchase other and larger grounds, with a grove, so as to be of more interest to agriculture in future.

Two entries on field crops were made. First Entry.—One acre yields 104½ bushels; * five acres yield 498½ bushels. Second Entry.—One acre yields 100 bushels; five acres yield 479½ bushels. No other field crops entered.

We have no means of knowing the average amount of crops raised in the county, but our crops are much better than former years. Corn, wheat, rye, oats, and potatoes are all a little over an average crop. Our farmers are becoming more and more educated to the use of improved farming implements and machinery, and they are becoming more tasty in building and improving their farms. Our county seat is improving rapidly. Many acres of land which, two years ago, were pasture fields, adjoining the town, are now dotted with fine brick dwellings and large manufacturing establishments, which far surpasses the most sanguine expectations of her people. The prospects for future improvement of the county and county seat is now more flattering than at any time heretofore. Our coal mines are inexhaustible. Our corn-growing valleys and different varieties of soil, as well as a never failing water power, including railroad and canal privileges, will soon render Coshocoton county equal to any and second to none in the State.

CRAWFORD COUNTY.

The Society, during the year, has been in a prosperous condition. The general interest among the people is greater than in former years, and the attendance, of course, larger. The northern part of our county is devoted to growing corn and wheat principally, with but moderate attention given to stock raising; the southern part is devoted almost entirely to cattle and sheep growing, and the crops are grass and corn. The average yield of hay per acre was about two and a half tons; corn, 65 bushels per acre; wheat, about 13 bushels. Have had an unusually dry season—much below the average rain fall.

* If the writer of the report had sent the reports of field crops to this office, it is very probable that I might have learned whether these crops were wheat, rye, barley, oats, potatoes, turnips or sugar beets; but as the statement now stands no one can tell whether the crops were good, bad, or indifferent, or whether they merited any premium at all.

JOHN H. KLIPPART, Sec'y.

since April first. Average temperature for past nine months higher than usual; yet the amount of the various products of the soil will compare favorably with any of the preceding ten years, both as to quantity and quality, with the exception of wheat. Oats and corn crops unusually large; same may be said of potato crop.

The only insect that did much damage was the "Colorado Bug" (*Doryphora decemlineata*), but it was prevented from doing much harm by the use of Paris Green and vigilance in picking the worm off the plants. From all I have been able to gather from different parties, the "picking process" seems to be most in favor—rather disgusting though, as there are many views in nature more pleasing than a gallon of these bugs in a tin pan.

In the eastern part of the county quite a number of orchards were robbed of their leaves, and the fruit consequently seriously injured by the "measuring worm."

But, taking all things together, we think the people of the county have received the blessing so earnestly asked for.

DARKE COUNTY.

The sixteenth annual exhibition of the Agricultural Society of this county was held at Greenville, October 3d, 4th, 5th and 6th, 1871. Our Society commenced the year 1871 with an indebtedness of about \$120.

A "Horse Fair" was held by the Society on the 18th and 19th of August last; the entire proceeds of the same amounted to \$579.20, and the expenses of the same, including premiums paid, \$650—so that the indebtedness of the Society was increased. The fair, if not profitable financially, we think had a tendency to increase the desire to introduce into the county horses of the very best quality and character. Quite a number of horses were placed on exhibition that did credit to their owners, and, we think, were fully equal to any of their class in the State.

On the first day of the annual fair the fine weather was taken due advantage of by those intending to compete for the premiums, and the whole day was briskly occupied in making entries of the products of the earth, the brain, and the hand of skill and industry. It was the busiest day at the Secretary's office we have ever had, and a greater number of entries was this day made than at any former fair of the county. It was previously arranged that the entries should close at noon of the second day, but from early morn until night they poured in continuously. No stop could be made, and the Board was compelled to take its order out of the way of the products that sought exhibition.

Besides regular entries, there were large numbers of articles placed on exhibition out of simple good will, so that the number of articles on exhibition was, at the close of the day, considerably over sixteen hundred. The number of regular entries in the various departments was as follows: Crops, 4; grain, 118; horses, 149; jacks and mules, 7; cattle, 70; hogs, 67; sheep, 36; poultry, 32; farm implements, 127; products of the farm and dairy, 493; horticultural department, 193; domestic manufactures, 260; painting and drawing, 45; miscellaneous, 15; total, 1,616.

The attendance the third day was unusually large for the county. It was estimated that ten thousand people were in attendance. Good order everywhere prevailed; no drunkenness; no confusion. All moved peacefully on, like the strong, deep current of a great river. Good lands, good roads, good crops, good schools, and a good government, are good civilizers, and have told deeply on the people of this county. They are an indus-

trious, substantial, loyal people, almost without knowing why, or that they could ever be otherwise.

On the fourth day the weather, as on the previous days, was mild and beautiful for the season. There were no "side shows" admitted to the ground. The exhibition was what it purported to be—an agricultural fair. Harmony and good order prevailed throughout the entire time. The increased premiums this year, it is supposed, caused the entries to be nearly double what they were last year, while the favorable season for crops caused the various samples of grain, etc., to be of the very best that could be raised. The citizens of this county may be proud of the various internal improvements, good roads, etc., all the result of their own labor, and that they live in a county whose soil is so admirably adapted to the raising of all kinds of grain growing in a temperate climate. The statement on field crops cannot yet be given, for the reason that our premiums are not awarded until the 20th of January, 1872.

Our fair was a decided success, so far as the exhibition in all the departments was concerned; but not so financially. The premium list was increased more than fifty per cent. over last year, and the large number of entries, and those of the very best, swelled the premiums paid to \$2,300, against \$800 last year, while the entire proceeds of the fair, owing to the fact that we still adhere to the "family" ticket system, which entitles heads of the family and minor children (and as many more as they may succeed in admitting to the ground on the same), were only \$3,053, which is much less than they would have been had we practiced the single ticket system adopted by some of our neighboring Societies. After paying the premiums and other expenses of the fair, the Society will be about \$500 in debt. The Society now numbers 1,132 members, and, though in debt, we are not discouraged, but an increased interest is manifested in procuring the best varieties of grain, securing the best agricultural implements, and of introducing into the county the best grades of stock of all kinds.

Our wheat crop this year has been unusually large, and our corn crop proportionally so. The average yield per acre of wheat was 16 bushels; corn, 50 bushels; oats, 60 bushels; fall barley, owing to the frosts, 35 bushels; potatoes, 100 bushels.

The principal destructive insects this year were the common cut-worm and the "Colorado Bug," the latter being very destructive in some localities. This is the second year of its appearance in this county. The method resorted to for its destruction was to sprinkle "Paris Green," mixed with ashes, on the vines while covered with dew, and the remedy had its desired effect.

FRUIT.—The crop of apples was small, but what were raised were of a good quality; the peach crop was a total failure; cherries, only an ordinary crop.

A great deal of attention is paid to ditching, and lands which twenty years ago were not considered worth the annual taxes paid, have been reclaimed, and now produce our largest crops of corn and barley. Our citizens are still availing themselves of the benefit of the "free turnpike law," and it is believed that in a few years more nearly every county road will be converted into a good pike.

DEFIANCE COUNTY.

The Defiance County Agricultural Society is in a prosperous condition. The fair of 1871 was held at Defiance, on the 3d, 4th, 5th and 6th of October last. The universal interest taken in it by the people of Defiance and neighboring counties shows that the

people of that section are at last beginning to appreciate the advantages of a well conducted Society.

The number of entries at the late fair exceeded seventeen hundred. The display of horses was unusually good. Parties were present from Toledo, Adrian, Michigan, and other places, as much as one hundred miles distant, with fast trotters. The horse show was the most exciting feature of the fair. The display of cattle was better than at any previous exhibition, though not what it should be in so fine a grazing country as Northwestern Ohio. There were several Short-horn thoroughbreds, and as good a lot of Devons as the State can boast of from Williams county. During the past ten years some of our enterprising farmers have purchased several thoroughbred Durham bulls from Central and Southern Ohio, and a lively interest in the rearing of fine cattle is manifesting itself in every township in the county. The show of sheep and hogs was as good as any State fair could boast of; embracing of the former, Merinos, Cotswolds, Leicesters, Southdowns, and common grades; and of the latter, Berkshires, Chesters, Essex, McGee's Irish Graziers, Suffolks, and common breeds.

The display of farm products was full and excellent, embracing everything raised in the Western States, and of as good quality as could be desired.

The display of poultry was very large, and of every variety. The Defiance Poultry Association added greatly to the interest of this department by their show of imported fowls, of several varieties. Mr. L. Davidson, of Defiance, exhibited a mammoth rooster, which, by common consent, was called the Big Ostrich.

In the Ladies' Department, the large hall, 150 feet long by 40 wide, was literally crowded, and showed that the ladies were fully up to their share of the work.

There were over twelve hundred varieties of fruit on exhibition, and many excellent specimens.

In the Mechanical Department, almost every article the farmer uses, of improved pattern, was on exhibition.

The Potato Bugs, which threatened in the early part of the season to destroy the potato crop, took their departure rather suddenly, and our farmers had in the year 1871 about as good a crop of potatoes as this great potato-growing region ever produced.

In short, we have every reason to be proud of our success, as our receipts will attest. The Society do not own the grounds, which is a drawback to their continued success.

DELAWARE COUNTY.

The twenty-fourth annual fair of the Agricultural Society of this county was held Tuesday, Wednesday, Thursday and Friday, Oct. 3d, 4th, 5th and 6th, 1871.

The first day was occupied in making entries and assigning stock and articles to their respective departments, and was a very busy day indeed. At an early hour, stock and articles for exhibition came pouring in from all parts of the county, and not till evening was there any diminution apparent. Notwithstanding many new stalls had been erected, long before noon every one was filled, rendering it necessary to build more, though it was impossible to meet the demand. By night, the entries numbered over 1400, with entries in domestic and fancy articles yet to be made. The second day opened with quite a large crowd of people on the grounds, and by noon—at which time all entries were to close—1667 entries had been made, being some 370 more than last year.

The entries in the various departments were as follows: Horses, 355; Jacks and Mules, 17; Cattle, 111; Sheep, 93; Hogs, 48; Poultry, 53; Mechanical Department, 157; Veget-

ables, 125; Grain and Seed, 98; Dairy Products and Preserves, 162; Fruits and Flowers, 125; Needle and Fancy Work, 185; Household Fabrics, 89; Paintings and Fine Arts, 49—Total, 1667.

The quality of the stock on exhibition was very fine indeed, superior to any former display, and received many commendations.

The show of heavy horses, principally of the Norman, French and English draft breeds, it is safe to say, cannot be excelled by any county in the State, and received many compliments from persons from abroad. While we claim great credit for our horses of the heavy breeds, still we must regret the scarcity among us of horses of fine mettle, adapted to saddle and light harness purposes.

Among the cattle, several herds of Thoroughbreds were on exhibition.

The third and fourth days, each, witnessed an immense concourse of people in attendance.

Aside from the dust, which was almost unendurable, the fair of this year was a complete success, both in quality of stock and articles on exhibition, and money received.

The receipts of the year were \$3,753.26; the expenses, including premiums, were \$3,507.08; leaving a balance of \$246.18, which has been applied to the payment of the indebtedness for land, purchased a few years ago. Our membership numbers 1372.

As a proof of our success is the fact that this year the entries were 370, receipts \$170, and membership 120 over last year.

The Agricultural Society of the county is a permanent institution, and the annual fairs are an index of the progress of the noble interest which it represents. Its utility has become apparent to all, and it receives the approbation and hearty support of every good citizen of the county.

The "horse" interests of our county have just been mentioned, and in regard to the cattle, it can be stated, in addition to the mention made of the Thoroughbreds, that all the cattle of the county are of improved breeds.

Sheep have been very extensively raised by our farmers, but within the last few years they have rapidly decreased, owing to the low price of wool. With the increased price paid for wool the past season, sheep have again engaged attention and bring good prices.

Hogs are still hogs, and it is to be supposed always will be, the world over. Our farmers don't see much money in them this year, at three and a half cents per pound, and are happy in the inverse ratio of the number they have to feed. The Magie and Chester breeds predominate. Very few of the original and simon-pure "wood-rangers" and "sandy-haired"—historically prolific—can be found among us.

Poultry is a neglected interest in this county. A scientific gentleman of our county—a poultry fancier by the way—in purchasing hens to supply his family with eggs during the winter, selected only *roosters*, not knowing the essential difference. Draw your own conclusions in regard to the attention given to this department of internal wealth.

Implements for farming and mechanical purposes are not manufactured as extensively among us as is desired. We are thus deprived of a valuable source of revenue, and have to send our money to other places for these necessities.

Delaware, however, claims peculiar advantages as a point for manufacturing purposes, though every county town sees itself in the same light.

Crops have not been unusually good this year. From frequent conversations with our farmers and observation, we can report as follows:

Wheat was only a moderate yield—averaging perhaps eighteen bushels to the acre.

Corn, though extensively planted, was rather light on the ear, owing to the excessive drouth; will probably average thirty-five bushels per acre.

Hay was light.

Oats were by far the best crop of the season—an unusual yield, probably forty-five bushels per acre.

Potatoes were very poor, owing to the drouth and the presence of the Colorado potato bug, which has put in a numerous appearance among us. It is needless to state that in this vicinity, they have fully sustained their well known ability to make the potato crop an astonishingly light one. All the poisonous compounds known in the dispensatory won't faze them at all, but seemingly renews their vigor.

Flax, which is extensively raised in this county, was this year a very ordinary crop. The seed and straw are each worked up here by establishments that form the chief manufacturing feature of this county, and keep in circulation a large amount of money, besides giving employment to a large number of persons.

Several cheese factories are operating with success, and produce a very palatable article of Yankee dessert.

Some three or four tile factories are doing a good business, and find ready sale for their wares. Our farmers are quite generally draining their farms with tile, and now and then one with a *ten per cent. mortgage*, though this is, fortunately, very seldom the case.

Our county is gradually advancing to a high state of cultivation, and everything betokens continued prosperity in all the departments of industry and wealth.

The soil is both fertile and undulating—the face of the country diversified by an agreeable division of upland and lowland—with farms kept with care, and beautified by industry and taste. The severe drouth of the summer has made the harvest light, yet the people of Delaware county have reason to give thanks to Him who sendeth “the early and the latter rain,” and do gratefully acknowledge His exceeding goodness to all mankind.

ERIE COUNTY.

The thirteenth annual Fair of the Erie County Agricultural Society was held on the grounds of the Society at Sandusky, on the 3d, 4th, 5th, and 6th days of October, 1871. The weather being favorable, it proved a social as well as financial success. The universal interest taken by citizens of all creeds and avocations, in both city and country, has rendered our fair gatherings epochs of unusual interest. A brief description of the condition of our grounds may not prove uninteresting; we give it below. Our grounds consist of twenty acres, (worth about \$50,000,) mostly covered by fine shade-trees, situate in the suburbs of Sandusky, a growing and prosperous lake-port city of about 16,000 inhabitants. They are surrounded partly by a fine hedge and partly by a high board fence. Our permanent buildings now consist of one two-story dwelling-house, for superintendent, one floral hall, in shape of cross, 70 by 70 feet in extreme length, surmounted by an imposing dome 50 feet in height; one fruit and vegetable hall, 35 by 100 feet, with four display counters the entire length; one mechanics' hall, 35 by 80 feet; one carriage hall, 35 by 80 feet; one dining hall, 30 by 100 feet, capable of seating 300 guests at once; and one first-class judges' stand, all substantially built and well painted. These buildings spread over the entire area encircled by our superb driving-track. Outside the track we have ample stabling for all horses, cattle, sheep, and swine that are entered for premium, besides private stabling for two hundred horses. By having our buildings inside the track we are enabled to use the whole of our grounds. Two drives cross the track, one for ingress and one for egress. We find no inconvenience in crossing. We have in contemplation the erection of a fine amphitheater, capable of seating three thousand persons. Our Society now numbers 1,230 members. The whole number of entries for this year was 2,431, an increase over that of last year of about 300.

First Department—Horses, jacks, and mules. Number of entries, 378. The spirit of competition ran high in this department, especially with thoroughbreds. The display of roadsters and draught stock was certainly excellent. Considerable interest was manifested in sweepstakes class of trotters. Our citizens offered a purse of one thousand dollars, which attracted to our track some of the fastest horses the country affords. No mules, and but few jacks.

Second Department—Cattle. Number of entries, 125. Our fairs are working a decided improvement in this department. Our farmers are becoming fully alive to the fact that good blooded stock is the only kind that is profitable where land is worth \$100 per acre and upwards.

Third Department—Sheep, swine, and poultry. Number of entries, 135. The display of sheep was not as large as could be desired, but of good quality. Of swine the display was very poor, by reason of low prices of pork and the consequent discouragement of producers. Poultry was well represented. The show was not to be excelled.

Fourth Department—Farm implements, mechanics' and manufacturers' products. Number of entries, 267. There was an excellent display of all conceivable kinds of labor-saving machines for the farmer and mechanic. Many novel inventions were examined and tested with satisfactory results. Manufacturers' Hall presented an artistic appearance; the collection was truly large. The exhibition in Carriage Hall, of carriages, and sewing and knitting machines, was good—some extra work displayed.

Fifth Department—Provisions, vegetables, and other farm products. Number of entries, 366. The interest is increasing, and the exhibition was unsurpassed. Grain samples very large in number, and specimens very fine. Samples of bread and butter large in number and of uniformly good quality, so much so that the committee were sorely tried to decide upon the relative merits, none being poor.

Sixth Department—Fruit and wine. Number of entries, 394. The display in this department deserves special mention, particularly the fruit, which with us has never been behind in point of excellence.

Seventh Department—Domestic manufactures, fine arts, and flowers. Number of entries, 740. This department was again the center of attraction by reason of the great interest taken in the fine arts and the finer domestic manufactures. The pyramid of flowers and plants towering up toward the light from the dome, attracted universal admiration from the visiting thousands. One wing of the Hall was beautifully decorated by Professor A. Uller, of Sandusky, with stuffed birds and animals, winter scenes and summer scenes in miniature, and a great variety of very fine specimens of rustic work. His collection added much to the attractions of the beautiful Hall, and he is entitled to much credit for the interest manifested. As heretofore, the ladies of the city and county were untiring in their efforts at decoration, and but for their active interest and exertions our Seventh Department could not have held its own.

Farms, barns, and gardens. Number of entries, 6.

The condition of general crops the past season has not been so favorable as usual, (except wheat,) in consequence of the severe drought during the summer and autumn months. Wheat was an unusually good crop, of superior quality and bountiful yield. The land of our country is well adapted to the culture of wheat and the other standard grains. With good farming we can easily raise from 30 to 35 bushels of wheat per acre; that is, on summer fallow. Our most successful wheat-growers think the method of plowing under clover-sod in the spring, and letting it decompose till July or August, and then giving it two more good plowings, by much the better way of preparing ground for wheat. After being thus prepared, and well drilled in, they feel confident of a good

crop. By practicing this method our best farmers have brought their land up to a high state of cultivation.

Corn was rather below the average in yield, on account of the severe drouth.

Oats made a fair crop, notwithstanding the shortness of straw.

Barley was considerably cultivated; about an average crop.

Potatoes were planted to quite an extent, but the dry weather caused the yield to fall below the average per acre. This county may be ranked as one of the most successful potato districts of the State. The Colorado potato bugs have made their appearance, but have done but little mischief; all are fearful of their ravages the coming season.

Meadows considerably injured by drouth. Newly-seeded meadows not so much damaged as old ones. Pastures considerably shortened.

SHEEP AND WOOL.—This branch of husbandry has been better sustained in this county, during the years of discouragement, than in most other parts of the State, and now we have a prospect of remunerative prices, provided our present wool tariff is allowed to remain unchanged, which proves that the agriculturist had better keep steadily at his usual pursuits, even though he be discouraged in respect to some particular branch, as the time usually comes round when he finds himself destitute of that of which he wishes himself possessed.

Our wheat growers find that the keeping of sheep is not only profitable in itself, but is an advantage to the wheat growing. The clover furnishes a great amount of feed through summer, and the wheat straw, with a small amount of grain, keeps them nicely through the winter; and they are also of actual benefit to summer fallows, as they keep down all growth of summer grass, and serve to make the land in better condition to receive the crop than it would be without them.

Some are adopting the process of cutting and steaming coarse fodder for sheep and other stock, which is proving very satisfactory.

APPLES.—A fair crop, rather less than an average. Shipments not so heavy as last season.

PEACHES.—This crop was very fine, both in quantity and quality. Large shipments were made from this county.

GRAPES.—Last year we reported a large crop of grapes, but this year the crop was still larger. Large quantities were shipped, but by much the larger quantity was manufactured into wine by the Wine Companies and private vintners. Large additions have been made, and new cellars erected, to make room for the largely increasing production of wine.

The subject of Drainage, on the low lands of the county, has been receiving much attention during the last few years. Many large public ditches have been constructed, and a large amount of underdraining with tile, which is proving a good investment of capital and labor.

Our Society gave its regular annual excursion to the Islands on the 16th of August last. The interest in these excursions is well sustained, requiring three large steamers to accommodate the concourse of people. We had the pleasure of meeting many friends from abroad, with whom we were pleased to exchange a friendly greeting.

The interest manifested in our fairs and excursions proves that a good work is doing. People are becoming better acquainted with each other, and are exchanging views in regard to the different topics of agriculture. Each can learn some good lesson from the other, so that, all in all, our Agricultural Society is an institution that should be heartily supported and bid "God speed" by all.

FAIRFIELD COUNTY.

At the first meeting of the Board of Managers, relying upon the past success of the Society, the Board directed the officers to negotiate a loan of \$1,000, to be expended in grading the new track, and beautifying and making necessary repairs on our grounds. The track was graded, a new poultry house and a large number of stalls were erected, and other valuable improvements made, by consent of the Board; the whole amounting to the sum of \$1,815.32. In addition to this, the Board increased the premium list (already liberal in all the departments) nearly \$600.

Our annual fair was held October 11th, 12th, 13th and 14th, and was a decided success, financially, and as an exhibition. Every department was well represented, and the attendance larger than ever before. The C. & H. V., and C. & M. V. R. R. Companies, kindly carried visitors at excursion rates during two days, which greatly augmented the attendance from adjoining counties. The live stock stalls had been increased to 230, but it was evident early the first day that these would not be sufficient, and lumber and carpenters were at once procured, and a number of additional ones constructed. The Board hoping to benefit the farmers by concerted action in the killing of rats, offered premiums amounting to \$150, to the township organizations reporting the greatest number of rats killed by the fourth day of the fair, but none of the townships organized.

On Saturday evening, the 14th of October, the Society closed its twentieth annual exhibition. It was one of the most successful ever held in the county. On Tuesday and Wednesday sufficient rain fell to lay the dust and cool the atmosphere, and the weather during the remaining three days was as pleasant as could be desired.

The first day is what is usually called preparation day, and but few people were on the grounds. On Thursday the crowd increased to thousands; the people came in all sorts of vehicles, with their families, from all parts of the county, and considerable numbers arrived on the different trains. But Friday was the great day this year. In addition to the very large number from the city and surrounding country, large numbers came from abroad, and by noon the grounds were completely covered with people and vehicles. At least 10,000 people were on the grounds. On Saturday the crowd was about equal to that of Thursday. The total number of entries was over ten hundred. The total receipts were over \$5,000. The display and quality of live-stock surpassed all former exhibitions.

The exhibition of horses and the trials of speed appeared to be the great center of attraction, and thousands of men, women, and children crowded around the horse-ring from morning until night, apparently eager to witness the exciting contests for the stakes. The exhibition of thoroughbreds was very fine. There was a fine exhibition of four-year-old stallions; and the two-year-olds and yearlings were the finest ever seen on these grounds. The lately imported Clydesdales of Mr. Reber, and the fine colts of the Musser brothers, attracted considerable attention, and were admired by all who saw them. There were several very fine animals from Circleville, exhibited by Mr. Young, two of which were pronounced the most showy animals on the ground; also several good animals from Licking and Franklin counties. The Musser brothers exhibited their fine black stallion which took the first premium of \$75 at the State Fair a few weeks since.

TROTting AND PACING RACES.—Great interest was manifested in the races by the visitors, and while they were in progress the crowd seemed to lose all interest in everything else. The grand stallion trot took place on Thursday, and created considerable excitement. The contest was between a fine stallion owned by E. M. Courtright and a splendid black stallion owned by the Musser brothers. The first premium was awarded

to Musser's horse, and the second to E. M. Courtright's. Time, 2.52½. The grand mare and gelding trot took place on Friday afternoon. The entries were: Red Oak, owned by E. M. Strode; Red Dick, owned by P. Bauman; a sorrel, owned by M. Poff, of Liberty township; a bay, owned in Newark. Mr. Bauman's horse won the race in 2.45.

There were some very fine mules on exhibition. They were owned by Messrs. Ashbaugh, Hinckle, Peters, Bowers, Griffiths, and Whiley. There were 212 entries of horses and mules.

The number of cattle on exhibition was not very large, but the animals were very fine. There were 33 entries.

There were 31 pens of sheep, containing 108 animals, of all grades, including Cashmere goats, Merinos, Longwools, Cotswolds, Leicesters, and many others. These animals equaled anything usually seen at a State Fair.

There were 35 coops of poultry, containing game, Brahma, Poland, Hondan, and various other breeds of chickens; also turkeys, geese, and ducks.

The exhibition of swine was the best ever seen in this region. There were 37 pens, containing 109 animals, including Berkshire, Magie, Chester Whites, and all the various breeds; also Mr. Reber's fine imported stock, and a boar which weighed 900 pounds.

The display in the Vegetable and Fruit Hall was exceedingly large and varied, and formed an attractive feature of the exhibition. We found here 27 lots of Irish potatoes, sweet potatoes, tomatoes, mammoth pumpkins and cabbages, egg-plant, onions, parsnips, turnips, beets, celery, water-melons, &c.; also bread, butter, honey, maple-molasses, &c. In this hall was exhibited some of the finest grain ever seen in this county. The display of winter apples surpassed any former exhibition. Mr. Busby had on exhibition 15 varieties, among which were samples of very nice winter Rambos and Tulpehocken. Martin Wells showed 20 varieties of fine grafted fruit, and James Steepleton 15 varieties; Benjamin Freeman exhibited splendid samples of Flora Mundi or Mammoth Pippins. J. A. Fettes had 7 varieties, one of which is worthy of special mention. It is called the Cly Beauty, and is a very handsome apple, bright color, good shape, and makes a fine dessert apple, late fall, every one perfect; is well suited for this climate, and is very prolific.

Fine Art Hall was pretty well filled, but the display was not half as good as it should have been.

The display in Floral Hall was quite meagre, except in the item of flowers; and the Society is indebted to Mrs. John S. Brasee, and Mr. Gravitt, the florist, for filling up the empty space.

Agricultural implements and machines were well represented by the firms manufacturing in Lancaster.

The following is the number of entries in the different departments: Horses, 216; mules, 14; cattle, 43; sheep, 62; swine, 67—total live stock, 402; other departments, 641—total entries, 1,043. The receipts of the fair were \$5,093 an excess of \$447.22 over last year. Our board continued the old system of selling tickets for one dollar, admitting the purchaser and his family, except boys over 15 years old, during the Fair, which greatly curtailed our receipts. Had the 25 cent ticket system been adopted, our receipts would have been nearly doubled. The Treasurer's report shows that after paying the premiums, expenditures for improvements, and current expenses, there is a surplus of \$690.90 in the Treasury, which with the quota from the County Treasury, will make a surplus of over \$800. The total number of members is 1,651.

As to the prospects of our society for future progress and usefulness, we can only say we have one of the best located and most beautiful fair-grounds in the State; our buildings and improvements are first-class; good feeling exists between the members, and

the attendance and receipts at our Fairs have been steadily increasing during the past four years. Our principal crops are corn, wheat, rye, oats, buckwheat, and barley. Fruits of all kinds and grapes are also claiming the attention of many of our best and most enterprising citizens, and large quantities of native wines, (some brands of which are acquiring a wide-spread reputation,) are made. The Colorado potato-bug visited us in large numbers, doing considerable damage.

FAYETTE COUNTY.

The Twenty-seventh Annual Fair of the Fayette County Agricultural Society was held on the 22d and 25th days of August last, inclusive. Although ours was the first exhibition of like Societies in the State, in point of time, it was, in many respects, one of the most successful. The opening of the exhibition promised well for success in *all* respects.

A finer show of cattle, horses and hogs has never been witnessed at any former exhibition of the Society, and perhaps has been equaled by but few in the State.

The exhibition in the Floral Hall was better than last year. The ladies made a very fine display of domestic manufactures. The agricultural machinery, and farm and garden products, which evinced good cultivation and careful selections, have never been equaled at our previous fairs.

The weather, during the first three days of the fair, was delightful; and the value of our social annual reunion could be seen in the hearty greetings of all classes as they met together with social equality.

On the fourth day of the fair a drenching rain prevailed the entire day, which wrought a sad misfortune to our finances. In consequence of the rain, an exhibition on that day was not possible, but the following day was the conclusion of the fair, with but a small attendance.

FRANKLIN COUNTY.

The annual meetings of the Society are held on the first Saturday of May. The grounds of our Society are the most extensive in the State, comprising nearly one hundred acres, eligibly situated, about half a mile east of the city proper, and at present within the corporate limits of the city, with numerous avenues leading thereto, one street railroad in successful operation, with a fair prospect of another during the present year. The grounds are well fenced, and the stalls, pens and halls are of the most substantial character, and are numerous enough for an ordinary county exhibition, but not sufficiently numerous for the exhibitions of our County Society.

Our last fair, September, 1870, was a most decided success, the exhibition in almost every department being of the very highest order, of the best class, and reflected great credit on all concerned. The entries numbered about 2,000, and the receipts over \$7,000. A list of the premiums awarded is herewith attached; also the published statement of the receipts and expenditures for the past year.

The past year has been a remarkable one in many respects. First, the great lack of rain, all the streams drying up, even to so-called never-falling springs, was the occasion of much alarm about the crops, and yet, notwithstanding this, the crops certainly were

never better, and especially so in the vegetable line. Second, the very uncertain nature of the seasons was no less the occasion of much discussion and alarm, and yet all things turned out pretty well. Prices in stock, in the various crops, declined to a very low figure.

No special transactions have occurred before our Board during the year worthy of mention.

FULTON COUNTY.

There were no competitors for premium on crops. We have 466 members. The fair for 1871 was a success; the indebtedness of the Society, created the previous year in building Floral Hall, has been paid, and we are nearly out of debt; about \$150 still in arrears. There was an increased interest manifested in our late fair, especially in the stock departments, and our prospects never looked fairer than now. The principal crops raised in the county are wheat, oats, corn and potatoes.

	Acres.	Bushels.
Wheat	20,000	250,000
Oats	10,000	325,000
Corn	15,000	700,000
Potatoes	500	40,000

Owing to the prevalence of the potato bug the previous year, not one-half of the number of acres were planted; and, on account of the drought in the latter part of the season, not half a crop was raised per acre.

We consider this as one of the best fruit counties in the State. I never saw a better display of nearly all kinds of orchard fruit than was made at the fair. The number of entries made at the fair in 1871 were 511.

GALLIA COUNTY.

The sixteenth annual Fair of our Society was held on the Fair-grounds, at Gallipolis, on October 4th, 5th and 6th. The Fair was a complete success, everybody being pleased, and the number of entries this year was larger than on any preceding year, there being 122 more entries than last year. The receipts and attendance were also larger than at any former year, and a greater interest manifested by all concerned, and the prospects for the Society the coming year are more flattering than at any former period. The Stock Department was well represented, not only in numbers, but in quality of stock shown, especially horses and cattle. The exhibition of sheep and swine, though not so large, was very fine. The display of fruits, grains, seeds and vegetables was very good. There was also a creditable display, in the Ladies' Department, of needle-work, ornamental work, cakes, jellies, flowers, etc. We also had a good display in all other departments, and hope to have a better next year.

There was no competition on crops. The receipts at the Fair were \$981.35. Number of members, 83.

The principal crops in our county are corn, wheat, oats, potatoes, and others usually raised in southern Ohio. Our farmers pay considerable attention to improvement of stock, and many are turning their attention to the culture of fruits and grapes.

Crops of all kinds an average. Corn more than an average, both in yield and quality.

It would be impossible to give a correct statement of the amount of crops raised in the county, or the average yield per acre, for this year, as we have no means of ascertaining.

GEAUGA COUNTY.

The fortieth annual Fair of our Society was held on the 20th, 21st and 22d days of September, 1871; and notwithstanding the fact that the general impression prevailed that the interest in our annual exhibitions had considerably decreased, the Fair was the most successful one held by the Society for many years. There seems to be in our county—which is particularly devoted to cheese making—a growing interest in the raising of fine cattle, the Durham being the favorite breed. Within the last year several thoroughbred animals of this breed, selected from some of the best herds in the State, have been brought into the county, and were on exhibition, making a lively time among competitors. Attention is also given to thoroughbred Devons and Ayrshires, of which breeds there was a good exhibition.

The show of sheep was very fine, comprising full-blooded Cotswold, Canada breed, full-blooded Merinos, etc.

The swine pens were all filled to overflowing with Magies, Berkshires, Chester Whites and Russian, and with various grades and crosses.

The exhibition of farm and carriage horses was good, but there were but few stock horses shown.

The other departments were also well filled, and the Society feels confident that their annual exhibitions are productive of good results.

The total number of entries was 1,478. The Society numbers 351 members, have a fine ground, suitable buildings, are out of debt, and a balance in the treasury.

The crops the past season have been generally good. Hay more than average crop. Corn and potatoes large crop. Oats rather light. Wheat good.

The business of the county is making cheese, which is carried on by factories.

The latter part of the season has been exceedingly dry, with no rains during the fall.

GREENE COUNTY.

The thirty-second annual Fair of the Greene County Agricultural Society was held on the Fair-ground, near the city of Xenia, on the 12th, 13th, 14th, 15th and 16th of September.

The attendance was not so large as usual, from the fact, that Thursday, the principal day of the Fair, was wet and disagreeable from morning till night.

The show of horses and hogs was the best ever held on the Society's grounds. The exhibition of sheep and cattle was not so good. The display in Mechanic and Fine Art Halls was very good. The display in the horticultural department was very fine.

Our membership numbers about 800. Number of entries at Fair, 1829.

Had we had good weather, we would have had a surplus after paying all expenses, as the prospects at the opening of the Fair were better than for any previously held by this Society.

Principal crops in the county—wheat, corn, oats, hay, flax and potatoes.

Crops were generally good. In some localities the fruit was damaged by late frosts. In other localities the apple and peach crops were good. In some parts of the county the potato crop was very much damaged by what is commonly known as the "Colorado bug."

HAMILTON COUNTY.

The seventeenth annual fair of this Society was held Sept. 5th to the 9th, inclusive. The premium list amounted to \$4,200; of which amount, the packers and slaughterers of Cincinnati offered \$500 as a special premium on hogs, and this, in addition to our liberal premiums, drew out a splendid show of swine. The exhibition of stock was good, and the halls in all departments were well filled. The Grand Exposition in Cincinnati opening the same day with our fair, drew the crowd, and, financially, our exhibition was not a success.

The Treasurer reports members' tickets sold as 778, representing the members for the year 1871.

We have made an effort to secure grounds nearer the city for holding our fairs, as well as to provide suitable grounds for holding State or National exhibitions, but the Commissioners of our county have not succeeded in agreeing with parties as to terms of purchase.

Our Board are now satisfied that it is impossible to make the fair a success on the present grounds, and to attempt a fair in competition with the Grand Exposition, which promises to be conducted on a much more extensive scale for the coming year, would result as it has done for the two years past, as a financial failure to our Society.

Our county is no longer a farming community; our farms are now occupied as dairies, rented by gardeners, used as pasture or meadow, and, on the railroads and leading thoroughfares, are being subdivided and improved as country homes by the business men of Cincinnati.

As we offered no premium on crops, we present no statements of competitors.

The crops for the year 1871, in Hamilton county, are on the whole the full average. Corn generally good, somewhat affected in dry localities; oats good; barley less than average; wheat good, but not much raised; potatoes very much injured by the Colorado bug; vegetables good—markets well supplied; fruits better on high lands than for several previous years, while on low lands the spring frosts made fruit of all kinds a failure. The curculio makes sad havoc with all kinds of stone fruit, and will probably continue so to do until fruit raisers by the pasturing of swine in their orchards, or by other means, destroy the infected fruit as fast as it falls from the trees. Hay was a short crop, occasioned by the dry and hot summer.

As will be seen by the accompanying Treasurer's report, premiums awarded are not yet fully paid, the net proceeds of last fair being applied on the payment of former indebtedness of the Board for buildings and ground.

Unless some relief is furnished, by some means to the Society, in securing a location for fair grounds nearer the city prospects for future fairs are not promising. An effort made by the Society, under a special law passed by our last Legislature, to secure for our fair grounds, the grounds known as the Buckeye Race-course, has not yet resulted in success.

These grounds contain 81 acres, two and one-half miles from the corporation lines of Cincinnati, and are already partly fitted up to answer our purposes.

The committee appointed at a previous meeting to confer with the State Board as to locating the State Fair in this county for the next two years, reported that the greatest apparent difficulty in securing the State Fair was the refusal of the County Commissioners to complete the transfer of the Buckeye Grounds, in accordance with the conditions heretofore agreed upon, the said Buckeye Grounds being the only available location the Society could offer the State Board. The committee was continued.

The resolution amending Article V. of the Constitution of this Society, presented at a former meeting, providing for the election of officers in case of failure to hold an annual fair, was adopted, so as to provide for a valid election on the call of the President or any five members of the Board, previous notice having been given in two daily papers of the time and place of said election for ten days previous to the said election so to be called, the voters at the last regular election, or such persons as pay the annual membership fee, to be legal voters. In case no annual or special election is held, the officers and managers last elected to hold over until successors are duly elected and qualified.

The resolution heretofore presented to increase the number of managers of the Society was laid over until next meeting.

The Treasurer reported that he had received but \$402 of the \$500 subscribed as special premium by the slaughterers and packers of Cincinnati, and he was therefore instructed by the Board to pay said special premiums *pro rata*.

The Secretary and Treasurer were ordered to have their annual reports published, as required by law.

The President informed the Board that the last Saturday in January, 1872, would be the time for the last meeting of this Board as now organized.

HANCOCK COUNTY.

The twentieth annual fair of the Agricultural Society of this county was held in the first week in October, and was eminently successful. The exhibition of articles was greater than any previous year; in fact every department was fully represented, by the choicest articles. The improvement in stock was particularly marked, and I think would compare favorably with that of any other county in the State.

The weather was exceedingly propitious, and the receipts were much larger than any former year. Feeling that we had not room enough for the growing interests of our Society, the Board of Managers made an addition to our grounds by the purchase of five acres of land, and we have now 25½ acres of as beautifully located land as there is in the county, and with the improvements being made thereon, we can ere long boast of as beautiful grounds as any in the State.

Farmers have not been so blessed with abundant crops for many years as they were in the past. The yield of wheat is estimated at 25 bushels per acre, corn 60, flax seed 16, and other crops in proportion. Fruit was not very abundant, especially many of the smaller varieties, such as cherries. The potato crop was good but not so large as usual, from the fact that, on account of the ravages of the Colorado bug, farmers were afraid to plant. This bug made its appearance early and in countless numbers, but by a timely and vigorous application of Paris Green and lime plaster, in the proportion of one pound of Paris Green to forty pounds of plaster, the bugs were killed and the potato crop saved.

Farmers are devoting much time and attention to the matter of underdraining, and the

united testimony of all is that the money so expended is repaying them a larger interest than any other investment.

The resources of our county are being rapidly developed, and the number and character of new farm buildings, school-houses and churches which have been erected the past year, together with the improved stock and farming implements, fully attest the continued prosperity of our farmers.

The number of members of our Society is now 738, and includes almost all the most substantial farmers we have. There are, however, those who are rightly regarded as "good farmers" who are yet unable, or at least unwilling, to acknowledge that they can see any good in county agricultural societies.

HIGHLAND COUNTY.

The fair of the Society was held on the 6th, 7th and 8th days of September, and was very successful, and well attended on the second and last days. The total receipts were \$1,301.36, expenditures \$1,281.14; of which sum \$916 were paid for premiums.

The County Commissioners, at their June meeting, assumed all indebtedness of the Society, and a clear deed was made to the county of the fair grounds, consisting of twenty acres in the corporate limits of Hillaboro. The good effects of this action was very apparent at our fair; more interest was manifested than has been heretofore; there was a much larger number of entries, in all classes, and a larger number of visitors in attendance.

The crops of Highland county for this year were above an average, except perhaps wheat and hay.

There was an abundant crop of all kinds of fruit. Apples, peaches, and all of the small fruits that are cultivated in this county, were in great abundance.

The usual complaint of the ravages of the curculio was made, and, so far, no remedy appears that is successful in exterminating this pest.

The only new enemy of the farmer that has appeared this year is the Colorado Potato Bug. Many supposed that this bug would destroy the entire crop, but in this they were disappointed; many patches were destroyed, but there was a fair average crop of good potatoes. Various remedies were tried to destroy the bug, some with success; the most successful plan was to go through with pan and paddle and beat them off, and then destroy them. Some tried Paris Green with success; but this is considered a dangerous article to use.

HOCKING COUNTY.

The nineteenth annual fair of the Hocking County Agricultural Society was held on its grounds, one-half mile east of Logan, on the 5th, 6th and 7th days of October, 1871.

Notwithstanding continued clouds of dust kept away a large number, who would otherwise have come for pleasure, our attendance was much larger than that of previous years, and our small grounds were almost completely filled with people.

As our county is small and good tillable land scarce, until the vast mineral resources locked up in our "eternal hills" are more fully developed, our people will remain with comparatively limited means, and our Society cannot advertise "competition open to

the State." But with our fair start, and the increasing interest taken in agriculture and the raising of fine live stock, we hope soon to enter into competition with our neighboring, richer counties; and we rely on this the more firmly from the fact that a great many of our younger, more progressive men of means have, in the last few years, turned their attention to practical farming and the introduction of fine strains of blooded stock.

The award of premiums this year was \$655.85, and although small, was larger than that of any previous year, and approximated more nearly to some compensation for time and labor devoted to exhibition, and gave universal satisfaction. The number of entries was 548.

Our membership is 484 persons.

The display of live stock more than doubled that of former years. Among horses, we had descendants of old Lexington and Messenger, and common yearling colts that weighed 1200 pounds. The Devon cattle outnumbered the Durham, and rather predominate throughout the county. One Durham bull was brought here, at great expense, from Kentucky; and there were others, direct descendants from imported stock. One yearling weighed 1000 pounds, and that with no pushing or extra care. One herd of beautiful red heifer Devon calves attracted particular attention, and elicited universal admiration. The display of sheep was small but good, the breeds being principally Merinos and Cotswolds. In hogs, we might have competed with the State; the most noticeable breeds were the Poland, China and Berkshire. Six-month pigs weighed 200 pounds and more.

The show in Agricultural Hall was poor; this was the only failure in any branch of the whole exhibition. There was not a bushel of wheat, rye or oats in the hall, and wheat is the principal cereal of our county.

Mechanics' Hall was well filled with everything in that line; and Floral Hall was elegant, containing innumerable rare works of art and objects of *virtu*.

Our wheat crop, based on the assessor's returns, was larger this year than last; our farmers, mostly, sold all they had to spare for market directly after harvest, at \$1.05 to \$1.10 per bushel, and now that the price is advancing, they find themselves without any to sell. Wheat was injured very little by the fly, and not at all by rust; but it came to the millers, wet and damp, right from the threshing machine, and is considered by them much inferior in quality to last year's crop. The acreage this year was 13911, and the yield 134,109 bushels, or about our general average of 10 bushels to the acre.

The corn crop was abundant notwithstanding the universal, unprecedented drouth, and hill corn is better this year than for many years. A great deal has been sold at 40 cents per bushel, while 60 cents has been the usual price, hauled right from the field. There was planted this year 17,337½ acres, with a yield of 520,378 bushels.

Potatoes are plenty and cheap. The Colorado bug stripped the vines in many places, but this did not seem to materially affect the yield. The acreage was 534½, and the yield 30,307½ bushels. All varieties are successfully grown with us; yet the Early Rose, and the Peach-blow for late potatoes, are in most favor.

The above are the principal crops of our county.

The fruit crop was small. Peaches, in the higher parts of the county, were large and luscious, and sold readily for \$2.50, and proved to be a very profitable crop to some of our hill farmers. Apples are scarce, and commenced rotting soon after picking. We are only beginning to grow grapes and wine, yet we have long had southern hill-slopes well adapted to the growth of the grape and *nothing else*. I predict that this will soon be a large and profitable branch of industry with us.

A very small breadth of oats was sown. Barley is a much better crop and more grown. Very little *e* is raised for market, our farmers in the valley preferring to plow it under

for manure for corn. Very little grass seed is raised, and we mostly procure it from Cincinnati. Hay was scarcely a half crop, and has been sold for \$20 a ton in the stack; and this has brought corn-fodder in good demand.

Now this finishes the crop report, and in conclusion, I would say that our Society is in the hands of progressive, practical farmers, all the officers and directors owning farms, and everything connected with the Society is carried on in a plain, practical way. We offer as large premiums as we can, to come out even in the end. This year every one has been paid, and there was no grumbling, either at the award or the amount of premium. Our receipts from percentage on entries were smaller than they should have been, from the fact that our second premiums were very nearly as large as our first. We will try to remedy this next year.

Our Society having been annoyed, previous years, by the erection of liquor and gambling booths directly on the outside of the inclosure, it was resolved by the Board this year, "That no intoxicating liquors of any description should be sold, and no gaming devices exhibited, within the vicinity of the fair grounds." This rule, which many declared could not be enforced, took like a charm, and will serve to make our fairs more popular hereafter. We were offered exorbitant sums of money to break over this rule, but money was no temptation, for our honor was at stake.

We offered no extra sweepstake premium for horse-racing, and, in fact, had none of that predominating feature of most fairs; and so good was our exhibition otherwise, that no one noticed it, and all were well pleased.

You can put down the Hocking County Fair of 1871 as a success.

HURON COUNTY.

The seventeenth annual Fair of the Huron County Agricultural Society was held upon its grounds in Norwalk, on September 19th, 20th and 21st, 1871.

The officers of the Society put forth their best efforts to secure a large attendance, and spent large sums of money to make the grounds comfortable for stock, convenient for exhibitors, and pleasant for visitors, and although the Fair was well patronized, and the receipts larger than at any previous year, yet the expenses being so great, the Society remains, financially, about the same as it stood prior to the Fair.

Number of members about 300. Number of entries at last Fair, 912.

JACKSON COUNTY.

In presenting this, our seventeenth annual report, we are gratified to be able to exhibit a still increasing prosperity.

The year of 1871 has been one of much interest with the Jackson County Agricultural Society. The annual exhibition of the Society was held on their grounds, at Jackson, on the 27th, 28th and 29th of September, 1871. It was a decided success, notwithstanding the first and second days were unusually chilly for the season, which reduced the receipts to some extent on those days, but on the last day the weather was beautiful, the attendance the largest of any previous Fair, and the receipts the largest ever had. The untiring exertions of the Executive Committee and friends of the Society, have made this one the most successful of the series.

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During the past season the Society has bought the grounds upon which the Society has been holding annual fairs. It is a beautiful piece of ground, situated at the foot of Broadway-street, and has one of the prettiest oak groves on it that is found any where in this part of the State. It is rather small in extent, containing eight acres only; but lands adjoining to it can be had at reasonable prices when they are wanted. The grounds cost three thousand dollars. The county commissioners will pay one-half of the purchase-money. In buying our grounds we have incurred a considerable indebtedness, but hope soon to be able to liquidate the same.

The number of entries this year was larger than at any previous Fair, and more especially in the live-stock department, which was beyond the expectation of the most sanguine. The display of horses was far superior to that of previous years.

CATTLE.—In this department there is a marked improvement over other years, demonstrating the fact that our fairs are exerting an influence in the right direction.

SWINE AND SHEEP.—The display in this line was far better than other years.

VEGETABLES AND OTHER FARM PRODUCTS were equal to other years.

The Hall, as usual, was the center of attraction. The floral department is evidence of the refined taste our mothers, wives, sisters and daughters take in the cultivation of flowers, which is sure to make sweet home on this earth the happiest place this side of Paradise. Household manufactures, fine arts, fancy articles, etc., made a magnificent display, and reflects well upon the industry, taste, intelligence and usefulness of our people. The taste displayed in the general arrangement of the Hall reflects great credit upon those who had it in charge.

Our county is well adapted for miscellaneous agriculture. Horses, cattle, swine and sheep are largely bred and raised for home consumption and exportation, and pays the producer a fair compensation.

Among the cereals produced, corn is of the first importance, and is the least liable to fail, and always a paying crop. This year a larger acreage than usual was planted, and the crop a good one. Average, twenty-eight bushels per acre; amount produced, 500,000 bushels; quality good, and saved in the best condition.

WHEAT.—Almost a failure. The prospects were good up to the first of June, when the Hessian fly commenced its work, and did it so well, that the husbandman had nothing left. It is a great loss to the county. Most of the wheat sown this fall, for seed, was imported from Ross and Highland counties. Don't think there were 10,000 bushels harvested in the county.

OATS.—A good crop and superior in quality; yield per acre, thirty bushels; amount raised, 120,000 bushels.

RYE, BARLEY AND BUCKWHEAT.—Very little grown in the county. The latter a failure.

SORGHUM.—Good average crop.

POTATOES.—A light crop; season too dry; quality good.

FRUIT.—A partial crop; missed on low lands. Peaches met with the same fate.

Small fruit culture does the best here, and is gaining in favor with our farmers, and will be more attended to in the future.

HAY.—This crop is next to corn in importance, and is a very sure crop, and the yield this year is one ton to the acre, and will yield 15,000 tons, of superior quality.

The Society paid one premium on field crops, for corn raised on one acre by Charles Radcliff. The product was one hundred and eight bushels and fifty-two pounds—seventy-five pounds to the bushel.

The Society has a membership this year of 423.

The past season has been one remarkable for the absence of the usual amount of rainfall in this section of country. The ground was not thoroughly wet this season, and the result is, there is and has been an unusual scarcity of water. Our streams, creeks, springs and wells have but little water in them, and many of them entirely dry, and the prospects are favorable for a cold, dry winter.

Of the insect tribe, the Hessian fly has done the most injury. It almost destroyed the wheat crop, and was found in every field in the county. Much damage was done, in several locations, by the grasshoppers eating bare many meadows and pasture fields. The cut-worm and wire-worm did some mischief to the corn in early spring. Yet, on the whole, we have plenty to subsist on, and feel encouraged that the husbandman's calling is an honorable one, and one that will pay.

One of the best treats our people had during the Fair, was a speech from our worthy townsman, Dr. I. T. Monahan.

KNOX COUNTY.

The Eighteenth Annual Fair of the Knox County Agricultural Society was held on the 26th, 27th, 28th and 29th days of September, A. D. 1871.

The aggregate entries were in excess of any previous year, and the quality of the animals and articles exhibited in the different departments were of a high order of excellence, evincing the good effects the Society is having upon the productive industries of our county. The number of visitors in attendance at the last fair shows conclusively that our people have not lost interest in agricultural societies.

The success which our Society has attained, and the excellence of our fairs, is mainly attributable to the earnest, intelligent and zealous efforts of the officers and board, and the deep-rooted love for the advancement of agriculture in the minds of our people.

The premiums offered were varied and liberal, and, as a natural consequence, brought out a full exhibition in every department.

The excellent show of cattle, horses, hogs and sheep, insured to us crowds of visitors and fair receipts. The display of fruit was excellent. The household department was fully represented. Quilts, blankets, bread, butter, preserves, jellies, etc., attested to a high degree the skill and handiwork of the good housewives and fair daughters of Old Knox. Floral Hall was crowded to overflowing with beautiful pictures, bouquets and wreaths of flowers. There was a splendid display in the mechanical department.

Our membership numbers about five hundred. The entries in all the departments foot up about one thousand. Premiums awarded and paid foot up about \$1,800.

There was no competition on field crops.

The Society has not the means to estimate the amount of each crop raised in the county, nor the average yield per acre. The crops of our county were, however, of an average yield, excepting hay, which was light, on account of the drouth.

The Society owns about twenty acres of ground, and has placed thereon, within the last year, improvements in new stalls, costing \$2,000, which, with our splendid Floral Hall, gives to our beautiful grounds an attractive appearance. And if the Legislature of Ohio would do for us what it has done for our sister county—Licking—it would set us on our pegs, and leave us in a condition to make of the Knox County Agricultural Society a permanent and fixed institution in our midst.

LAKE COUNTY.

Our fair was held September 27th, 28th and 29th. The weather was cold and rainy the two first days, which prevented as large an attendance as usual. Number of members, 733; an increase of 45 since last year. The exhibition of cattle, horses and hogs, and also domestic manufactures and machinery, was much larger than usual. The prospects for the fair in future are good. Crops suffered from drouth, but a fair average of former years.

LICKING COUNTY.

The Twenty-third Annual Fair of the Licking County Agricultural Society was held at the grounds of the Society, near the city of Newark, on the 3d, 4th, 5th and 6th days of October, A. D. 1871. The grounds and buildings were in excellent order, the Society having erected, during the summer months, two very fine halls—one to be used as a dining hall, and the other for the exhibition of fine arts, etc. These buildings were erected at a cost of \$3,100 and upwards; in addition thereto we also built a large number of sheep stalls, to meet the growing wants of the Society. During the month of June, preceding our fair, a horse fair was held upon our grounds, under the auspices of the directors of our Society, which proved a great success; and the proceeds arising from the horse fair supplied, in a great measure, the necessary funds which we expended in the erection of the buildings above referred to.

Our grounds are now supplied with halls second to none in the State in point of beauty and convenience, and for capacity would accommodate the requirements of a district as well as the State Fair; besides, the managers contemplate the erection of additional halls during the coming summer.

The awards for premiums at this fair amounted to the sum of upwards of \$4,000 actually paid, besides a large discretionary award, and being \$500 larger than ever before awarded.

The crowds of people attending our fair during the four days of its continuance was simply immense; on the third day the number reached the magnificent figure of 18,000. But I regret to say that the receipts of the day do not correspond with that number of persons, and that is owing to our loose system of membership tickets, as one membership ticket enables the holder to enter with his family; and this privilege is often abused by the holder transferring his ticket to others, sometimes admitting, not only the holder and his family, but all his relations and friends. This abuse we intend to remedy before our next annual fair.

The receipts during the fair amounted to \$8,190.55. The number of entries were 3,800. The number of memberships, 1,269.

The display in all departments was largely in excess of any former fair, both in number and quality; especially does this apply to horses, cattle, sheep, swine, and poultry. In the two last named departments, swine and poultry, we have heretofore been deficient; but the deficiency was more than supplied this year.

In the class of thoroughbred cattle we have just cause to be proud; but where so many excellent animals were exhibited, it is hard to particularize. There were many herds of these animals on exhibition, all by Licking county breeders, some of whom have not merely a local reputation, but are known wherever thoroughbred cattle are understood and appreciated throughout the States. Among them were John Montgomery, George J. Hagarty and Wm. Matthews.

The animals of different ages exhibited by Larimore & Weiant, Warner & O'Bannon,

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C. P. Devinney, H. L. Reed, and Fulton & Van Voorhis, attracted much attention, and nearly all of the different named persons carried away premiums. The contest was close in many instances, and required the application of the closest scrutiny to determine the superiority of any of the animals of the different owners in the numerous classes into which they were divided for competition and exhibition, and in several instances the judges undoubtedly erred in their awards; but the exhibitors generously acquiesced in the decision, resolving only to carry off the prize at the next fair.

The sheep interests of Licking county are so well and favorably known throughout the United States, that I deem it unnecessary to more than simply say that the exhibition in this class at our present fair fully demonstrated the unabated zeal with which our Licking county wool growers cling to their favorite occupation.

I have heretofore, in my reports to you, dwelt with great enthusiasm upon the horses of Licking county, and perhaps the subject has so exhilarating an effect upon me that I have wandered beyond the borders of my bailiwick in bestowing praises upon the noble animal. From all this you probably conclude that I labor under a chronic attack of *horse mania*. For this reason I am reluctant to again allude to my favorite theme. But, as a simple act of justice to the many excellent gentlemen who devote so much energy and apply so much study to rearing and developing the equine race, I feel constrained to notice a few of the most prominent among them and the stock they produce and exhibited. Among the most noted thoroughbred stallions were Bastion, owned by Stigar & Co.; Northumberland, owned by James H. Moore; Frank Borton, owned by Woodbridge & Co. Woodstock, owned by B. G. Smythe; and Red Eagle, owned by Dr. Barrows. These different animals were exhibited with five colts each, their offspring. The display was unsurpassed; admiring thousands went into ecstasies at the sight, and each animal had his full share of friends and backers. The well-known stables of O. H. & Solomon Wood, Thomas S. O'Bannon, Wm. Seymour and others, contributed several fine brood mares and colts to the display.

Two very fine imported Norman draft stallions with colts, their get, were exhibited by their owners, Henry L. Reed and Edwin Buell, and were much admired for their symmetry, compactness and solidity of their organization.

These are but a few of the many instances I might enumerate of the interest manifested by our people in supplying Licking county with a superior stock of horses.

The mechanical departments were equally well supplied with the various articles pertaining to that branch of industry. In this class may be found the carriages, buggies of every description, farm and spring wagons, manufactured by Messrs. Ball, Ward & Co., and Tinnel Buhler, of this city, and the Harrison Bros., of Jersey, this county. For durability, beauty of finish and neatness, the carriages, buggies and wagons made by the above-named persons cannot be surpassed by any eastern or other manufacturers.

Our farmers, too, are awakening to the importance of improving the neat appearance of their farms, out-buildings, fences, etc., and also in the manner of cultivating their field crops, etc. Notwithstanding the severe drouth of last summer, five farms were entered for premiums for field crops, and these are the first entries in this class for several years; and no abatement in this important matter of properly cultivating and keeping up the farm is being permitted, as already five entries have been made for premiums for the best cultivated farm for next year's fair.

The Board of Managers propose fostering this exceedingly important branch of agricultural success, by offering premiums ranging from \$100 to \$20, which, it is hoped, will prove an additional stimulus to those engaged in the good work.

It is thus, by the offer of inducements, by awarding respectable premiums, that the

generous strife is engendered that has done so much to elevate and develop American agriculture, making the occupation of the farmer not only honorable and independent, but at the same time profitable.

Not being a practical farmer, I may be somewhat extravagant in my disquisition upon the honorable occupation of the honest farmer. But having been so long connected in my present capacity with the Licking County Agricultural Society, that I begin to think that, in theory at least, I, like another eminent agriculturist, Horace Greeley, cannot resist giving to the public the benefit of what I know about farming. But, as successful farming depends much upon the efforts and foresight of the frugal and industrious housewife, and the attractiveness of our fairs is, in a great measure, due to their presence and the exhibition of their handiwork, I feel it to be a duty I owe them, in so largely contributing to the success of our recent fair, to glance, but for a moment, into the department almost exclusively devoted to their arts, products, etc. The new fine art and floral hall built by us during the summer, already alluded to, was occupied principally by the ladies, and contained oil paintings, photographs, crayons, crochet work, needle work, wax work, sewing machines, green house plants, art flowers, bouquets, musical instruments, canned and preserved fruits, and the fruits of the season in their natural state. We supposed that these elegant halls would be more than sufficient in capacity for the purposes for which they were designed; but every inch of room was fully occupied. Never, since the organization of our Society, was the exhibition in this department so full and attractive; and, as an illustration of the industry of our Licking county ladies, it is simply necessary for me to say that one lady entered two hundred different articles for premiums, and several others from one hundred to one hundred and fifty articles. One lady was awarded the sum of \$98 in premiums, being certainly a generous reward for merited perseverance. Where so many deserve praise for their generous efforts to excel and contribute to the success of our Society, and as the ladies are easily excited to jealousy, I shall abstain from naming any, even of the most distinguished of the exhibitors. And, in bringing to a close the matters pertaining to the exhibition of the four days' show at the Licking county fair grounds, which was one of the most interesting and grandest sights witnessed during the fair, and consisted of the formation of a grand procession, composed of all the horses and stock of every description to which a premium was awarded, headed by the Zanesville Brass Band and a Military Band, and then moving around in the inner circle of the Old Fort, making a grand cavalcade, one-half mile in length, in the presence of thousands of delighted spectators, and more imposing than the review of the Old Light Foot Militia of former years.

The concluding subject of inquiry will naturally be: What is it that contributes the essential ingredient that always make the Licking County Fairs so successful? My answer is: Management—and without good management, and the offer of liberal premiums, no Society can prosper. Our present Board of Directors is composed of men of energy and practicability—men whose hearts and souls are enlisted in the enterprise, and who discharge their respective duties assigned to them with great fidelity, and at times to their own personal discomfort: and among these I may name, without fear of contradiction, that no man who has ever been connected with our Society has done more to promote its success than the present President, Mr. Joseph White. He has been untiring in his efforts to secure the erection of buildings and improving the grounds, at the same time guarding carefully and zealously the financial department, preventing fraud and speculation, and yet being generous, doing no man injustice, while advancing the cause of science and agriculture, and the interest of the Society of which he is the head. He has really proven himself the right man in the right place. Such is the unanimous verdict of the Society.

LOGAN COUNTY.

The twenty-first annual Fair of the Logan County Agricultural Society was held at the Fair-grounds, near Bellefontaine, on the 3d, 4th, 5th, and 6th days of October, 1871.

It was the best and largest Fair ever held in the county. There were about 1,400 membership tickets sold. The total receipts were \$3,502.14. The total entries, 920. Amount paid for premiums, \$1,000.

The Society has been able to pay, from income at Fair of 1871, the sum of \$321, on indebtedness for grounds, besides paying large amounts for improvements.

During the last four years, about 113 miles of free pikes have been constructed and completed in this county.

The crops of Logan county for 1871 were full and large. On an average, they probably were never better in any one year.

LORAIN COUNTY.

The twenty-sixth annual Fair of the Lorain County Agricultural Society was held on the 19th, 20th, 21st and 22d of September.

The first day was devoted to making entries and getting ready. The second day was rather cold and unpromising, but the third and fourth days were all that could be desired; the attendance on these days was fully up to expectations, and the receipts were very satisfactory to the Society indeed.

It was believed and feared by many that our Fair being in such close proximity to the Northern Ohio Fair, would be poorly attended, uninteresting, and, finally, be obliged to surrender as an organization; but such has not been our experience for the past two years. Last year we had our Fair before, and this year after, the Northern Ohio Fair, and are unable to see that we have lost either in numbers or interest. Every department was well filled, and at no previous exhibition were the number of entries larger.

During the last summer we have built a Floral Hall on the grounds, at an expense of \$1,200. Our Society, notwithstanding its being somewhat in debt consequent upon buying new grounds, fitting up and building on them proper and suitable buildings, is in a very prosperous and harmonious condition, and numbers at present 585 members.

On the 10th of last August an excursion was gotten up for the benefit of the Society, clearing some \$325, besides having an enjoyable time. These farmers' excursions are intended to be of annual occurrence.

Our Society has paid \$1,500 in premiums.

Subjoined is a list of the number of entries made in the different departments:

Cattle, 131, as follows: Shorthorns, 23; Ayrshires, 13; Devons, 8; Herefords, 35; Alderneys, 3; Natives and grades, 17; milch cow, 1; fat cattle, 6; oxen and steers, 6; herds, 8; sweepstakes, 11.

Horses, 167, as follows: All-work, 72; draft, 10; pairs and single, 11; double trotting 3; carriage and roadsters, 59; saddle, 4; open to all, 3.

Mules and jacks, 1.

Sheep, 80, as follows: Cotswold, 21; Leicester, 16, Southdown, 11; fine wool, 21; fat sheep, 9.

Swine, 28; poultry, 56; butter and cheese, 13; field crops, 2; grain samples, 29; fruit 100; garden vegetables, 125; farm implements, 59; mechanic arts, 10; leather, 12

wagons and carriages, 21; domestic manufactures, 54; sewing machines, 11; ornamental work, 46; fine arts, 21; miscellaneous, 62; floral department, 21; unenumerated, 64.

We had only two competitors for field crops, and will not make awards till the day of our annual meeting for the election of officers for our Society.

The principal crops raised in our county are hay and fruit. The following shows the number of acres of meadow, the number of pounds of butter and cheese, and number of acres of grapes produced and in bearing in our county, as shown per auditor's abstract of township assessors' returns for the year ending May, 1871: Hay, 39,513 acres; tons raised on same, 41,562, making the average a fraction over one ton per acre. There were produced one million pounds of butter and four million pounds of cheese. We have 38 cheese factories in active operation, and the tendencies are to increase this number. The wool interest of the county is falling off, evidently giving place to the manufacturing of butter and cheese.

This season was not so favorable for apples as previous years. The grape crop has not been equalled for a number of years. There are 550 acres in bearing, but we are unable to state the number of pounds produced. Many of our grape-growers converted their grapes into wine, owing to the low prices offered for them.

The potato crop was excellent; and although the Colorado bug put in its appearance in places, yet no material injury resulted.

The corn crop, though we have had a very dry season, was above an average yield.

LUCAS COUNTY.

Whilst the statements exhibiting the result of our labors do not compare in magnitude with that in other older and more populous counties, yet when it is remembered that Lucas is yet in its infancy—that a large part of its territory was originally covered by a dense forest, while other parts are low and marshy (though all, or nearly all of its surface is rich in the elements of plant-food), thus requiring much labor to bring the land under subjection and induce it to yield up its treasures to the husbandman, it is believed that the comparison will cast no reproach upon those who are so steadily bending their energies and expending their powers to make "the wilderness blossom as the rose," and to compel the waste places to smile in beauty.

And here it may not be improper to remark, that no influence—possibly excepting that of man's necessities, aided by ambition—has ever been brought to bear upon the farmers of our county, and as it is believed upon those of the North-west, so potent in its results as the holding of the State Fairs, for 1868 and 1869, at the city of Toledo. These exhibitions opened the eyes of thousands to the true grandeur of agriculture, and nerved their arms with greater vigor to battle for success in their chosen calling. The effects are seen on every hand—improved stock, increased neatness, greater efforts to produce what is better. From this influence our Society has imbibed a new life, and its members exhibit from year to year an increased knowledge of the best means to render farming both pleasant and profitable. Is not this an evidence which should have some weight in determining those who favor such a measure from pressing to a consummation the project of fixing permanently the location of the State Fair? Is it not better to maintain its migratory character, and thus extend as widely as possible, the opportunities which are so beneficial?

The eleventh annual fair of the Society was held upon its own grounds on the 19th, 20th, 21st and 22d days of September, and was so great an improvement upon any of its predecessors as to be regarded a success.

The number of members whose names now stand upon the books is 305.

The number of entries of live stock of every description was 219, and of miscellaneous articles 756, making a total of 975; number of premiums awarded, 497.

The receipts were \$1,425.51, and the amount of premiums \$731.00. Both these items are the largest ever exhibited by this Society.

The following is about as near an approximation of the principal crops of the year as can be arrived at, viz.:

	Acres.	Bushels.
Oats.....	6,774	267,412
Corn.....	12,792	589,600
Wheat.....	8,611	154,998
Potatoes.....	2,000	160,000

The hay crop was light in consequence of dry weather in the early part of June. The average crop probably does not exceed one ton to the acre. Fruit was also unusually light, though of fair quality. The crop of buckwheat was almost an entire failure.

The season has been a very remarkable one—rain falling in but small quantities, and yet with one exception, until after crops were matured, with sufficient frequency to keep vegetation in a healthy state. The fall pastures, however, were severely affected by drouth.

The Society now owns a fair ground of twenty acres, eligibly situated, just without the limits of the city of Toledo. It is near the line of the Detroit division of the Lake Shore and Michigan Southern Railway. A line of street railway extends almost to its borders, and a good plank road passes by its gates, thus offering easy facilities for approach to it from the city; while, on the other hand, it is in the direction of the most populous portion of the county.

The ground is well fenced, and a good supply of shade and ornamental trees has been set out, which will in due time greatly increase its beauty and its comfort.

We claim also to have erected during the past year, at an expense of over three thousand dollars, the most tasty and beautiful building for exhibition purposes to be found upon any county fair grounds within the State.

Three years ago our Society was homeless—a tenant at will, and rapidly going to decay. It had no attractive power, and, but for the persevering efforts of a few brave and resolute hearts, must have given up the ghost. Now it owns the grounds and improvements alluded to, and is not in debt for one dollar of their cost.

All improvements made upon the grounds are substantial and designed to be permanent, so that exhibitors may not only feel a pride in their property—for it belongs to the people—but also that such articles as they exhibit will be abundantly protected in every respect.

Having thus at last got a good home of its own, conveniently located and attractive in all its features and arrangements, the Society is exhibiting a new life. Those who have stood in the breach when but illy supported, now look with complacency upon the result of their efforts, and the people most heartily respond, "Well done, good and faithful servants, henceforth we will aid you in sustaining what has been so nobly done."

In conclusion it may be said, that we do not permit geographical lines to cut off any from our communion. The harvest is before us, and we ask—most cordially ask all who dwell within the shadow of the temple we have constructed to Ceres, to come with their

harvests, and with their families, and unite with us in the enjoyment of the feast. No invidious distinctions are made—competitors all have equal rights and equal privileges.

Imperfect as this report undoubtedly is in many respects, it is submitted in behalf of the Society, as a testimonial of what we are doing up here in this new region, and what may be done when there is a determined will.

One thing I may add to the above. Our Society has adopted the plan of holding its annual meeting and election of officers in January, in the city of Toledo. This occasion is made one of pleasure and profit. A suitable place being obtained, the members, with their wives and families, assemble; bringing with them such good things from their larders as they please, and all enjoy a good social time—partake of a picnic dinner—transact their business—form a more perfect acquaintance—cement the ties of friendship, and return to their homes feeling that the day has been not only pleasantly, but profitably spent. At our meeting last year we had present nearly two hundred people, and if the weather is favorable it is believed our next gathering will double that number.

MAHONING COUNTY.

The twenty-fifth annual Fair of the Mahoning County Agricultural Society was held on the grounds of the Society on the 3d, 4th and 5th days of October, 1871.

The weather was rather unfavorable, being very dry, and the roads and grounds exceedingly dusty, making it very unpleasant and somewhat dangerous, the dust on the roads being so dense that it was impossible to see but a short distance. The Society was compelled to sprinkle the track on the grounds.

The fair was largely attended, and the general character of the exhibition was highly creditable to the Society and the citizens of Mahoning county, even surpassing the most sanguine expectations of the Board.

The total receipts amounted to \$2,731.43.

The following is a list of entries in the different classes, to wit: Plowing, 8; horses for farming and general purposes, 97; horses for saddle and carriage, 94; horses for roadsters, 52; jacks, jennets and mules, 10; full blood Durhams, 31; Devonshires, 7; full blood cross-breeds, 28; neat cattle, graded, 16; trains of oxen, working oxen and steers, 30; fat stock, 17; improved American Merinos, 13; long and middle wool sheep, 26; swine, 17; poultry, 40; sweepstakes, 27; garden and field crops, 10; garden vegetables, 184; flour and grain, 79; fruit, 48; flowers, 41; dairy products, sugar and honey, 24; bread, pickles, dried fruit and wine, 56; jelly, preserves and canned fruit, 85; farm implements, 25; mechanic arts, 46; domestic manufactures, 51; painting and musical instruments, 13; minerals, oils and coal, 4; miscellaneous, 143; total, 1,322.

One entry often includes several articles or animals—in one instance as high as forty.

The Society is now out of debt, owns twenty acres of land, well fenced, and with a large amount of good and substantial improvements.

The managers are active, efficient and prompt in their attendance upon the meetings of the board.

The Society numbers 600 members.

It must be evident that our fairs are of much benefit to all classes of community; and it is confidently expected that the progress and usefulness of the Society will continue unabated in the future.

The principal crops raised in the county are corn, wheat, oats, flax, potatoes and grass. Small quantities of rye, buckwheat and barley are also raised. Corn will average about 45 bushels per acre; wheat, 15; oats, 35; flax, 9; potatoes, 200; hay, about 1 ton per acre.

Fruit was a very meagre crop; apples, a very short crop; peaches the same; pears, below medium; cherries, nearly a failure; grapes, a good crop, but of very limited cultivation in this county; although where cultivated they do well.

The past season, taken as a whole, although rather dry, has been ordinarily favorable to the general productions of the county, and has been remarkably free from ravages of destructive insects.

Mahoning county is largely devoted to stock raising, and is naturally well adapted for this purpose; it is also well adapted to dairying purposes, and large quantities of butter and small quantities of cheese are annually produced.

Farmers are becoming interested in the production and improvement of stock, realizing that it costs no more to rear a good than a poor animal.

It can be truthfully said that the farmers of our county are actively interested in the improvement and progress of agriculture generally.

MARION COUNTY.

The twenty-first annual Fair of the Marion County Agricultural Society was held on the Society's grounds, on the 5th, 6th and 7th days of September, 1871. The exhibition of stock was very good, especially so on horses. Each class was fully represented, and the display was good. The entries on cattle were good, but, owing to some misunderstanding of exhibitors, the display was not good.

HOGS.—The display of hogs was the best ever shown in this section of the State.

GRAIN.—The principal grains grown in this county are wheat, corn and oats. The wheat crop this year, was not good; corn and oats never better.

VEGETABLES.—Owing to the early date of the fair, the show in this department was slim. Mr. Jacoby exhibited some of the best potatoes in Ohio; among which was the Peerless, Prolific, Early Rose, Mohawk, Early Imes, Peach Blows, etc.

FRUIT.—Considering the dry season, the display was good. Apples, pears, peaches, quinces and grapes, were all represented; in short, our fair, taking all things into consideration, was a success, though the receipts this year were not as large as some of the previous ones. One drawback to our Society is, that too many of the directors are willing to let the remainder do the work and take the curses. We are in favor of men for directors that will attend to business, without regard to locality. Give us a good, working board, and the Marion County Agricultural Society will be second to none in Ohio. Two years ago the present board took hold of the Society with an indebtedness of \$3,200; to-day \$550 will pay the debt. We predict a bright future for the Society.

MEDINA COUNTY.

One application only has been received on field crops, to wit: L. Robb, Esq., of Lafayette, on corn. One acre, soil sandy loam, upland, and under cultivation for thirty years; plowed in spring eight to ten inches deep, harrowed twice, planted four feet each way

apart; no hoeing, but cultivated three times; cut in September and husked in October. This acre is an average of the eight acres in the same field.

COST.—Rent of land, \$3; plowing, etc., \$3.75; planting, \$1; seed, 15 cents; dressing, \$4; cutting and husking, \$5.50; drawing, \$2; total, \$19.40.

YIELD.—140 bushels ears of corn, at 30 cents, \$42; two loads corn fodder, \$8; total, \$50; profits, \$30.60.

The Society having, several years ago, issued certificates of stock for the purchase of their ground, resolved to pay off the same, if possible, and this year passed a resolution to issue five annual membership tickets for and in full payment of a share. Ninety-two tickets were taken at our late fair under this resolution, and it is believed worked beneficially for the Society. The Society largely increased the premiums offered, and have also built one new building on its ground, and yet is free from debt.

The county is best adapted to grazing, and the factories for cheese making have been well worked the last season. The increase of cattle over last year is over 4,000, and in fact most of this is the increase of cows alone. Sheep are doing much better, with an increase of over 4,000 on 1870. But a few lots of ewes can now be found at five dollars per head.

The past year has yielded the usual crops of all kinds. No general ravages made this year by insects. In a few localities the Colorado potato bug made its appearance, but not in quantities to do any perceptible damage.

MEIGS COUNTY.

The fourth annual Fair of our county was held on the 20th, 21st and 22d days of September, 1871. The exhibition, in nearly all of the departments, was as good as could be expected. Horses, hogs and sheep were well represented. The show in the mechanical department very good; while the farm product was filled with as good varieties of grains, vegetables, etc., as will be found anywhere.

Number of entries, 452. Number of members, 450.

The wheat crop of the past season is considerably above the average of this county. Corn is also good, and well matured. Oats never better; 45 to 50 bushels per acre being the yield.

MIAMI COUNTY.

For seven years the Miami County Agricultural Society has held a "Stock-breeding and Agricultural Implement Fair," in the spring, and although it has only paid expenses, the premiums being confined to horses, cattle, sheep, swine and agricultural implements, yet it has been found to pay in another direction, to wit: it brought before the people a class of breeding animals, and a very great display of agricultural implements, at the right time.

Receipts, May, 1871, \$350. Premiums paid, \$289.

The twenty-fifth annual Fair was held on the company's grounds, near Troy, October 4th to 8th inclusive. The attendance was large, and the display in every department creditable to the county.

No Fair heretofore has been so successful in its display of every branch as was this, and it demonstrated the fact over again, that the Agricultural Society of old Miami had outgrown its childhood's clothes. In a word, our third day was literally a jam, the grounds of eighteen acres being covered, crowded, uncomfortable, and even dangerous.

The exhibition of agricultural implements was of a very superior order, attracting universal attention, and the bringing of them before so many investigating minds at once, cannot fail to be productive of good. The list of horses was well filled in all its kinds and grades, except the racer. The evils growing out of horse-racing had become so great and uncontrollable, that it was deemed advisable to shut it out, and it was done, with marked improvement, morally speaking. Trotting stock and roadsters were in fine display, with some fine steppers from abroad. The display of draft animals was better than ever before, and this kind is attracting more general attention among breeders. A fine show of different breeds of colts followed.

CATTLE.—For several years there has been a steady influx of blooded stock into the county, and there was a very respectable number of the finest animals exhibited, that will soon be felt throughout the neighborhood.

SHEEP.—Never better, and cannot be excelled.

SWINE.—Chester Whites and Essex, Berkshires and Suffolks, Magies and Chinas, were abundant, with their backers, and friends of a cross. A marked improvement over all former years.

GRAIN.—This is decidedly a grain district, and it may be said that immense quantities of the various grains are here produced. The corn and wheat, though hardly an average yield, was very sound and merchantable, and unusually early.

POTATOES.—The potato crop was abundant, the Colorado bug doing but little injury. There can be no failure if "Paris green" is used generously and often.

FRUITS.—Apples a very low average in quantity, but very fair indeed, and decidedly better than any time within the last ten years.

A late spring frost almost entirely destroyed pears and peaches, and seriously damaged grapes and small fruits. Notwithstanding all this, the show at the State Fair did not throw us into the shade. The exhibit was large and excellent.

Canned fruits, jams and jellies, wines, butter, and the hundred other articles in this line were abundant.

Fine Art Hall was filled to overflowing with a very creditable display of manufactured goods, fine fancy work, paintings, etc., etc.

The admission fee of 25 cents is financially and morally ahead of the dollar family-ticket system, as heretofore practiced. Try it, friends.

The shutting out of racing worked no ill to the finances, and meets the approval of the best men of the county. Another improvement in this direction will be made the coming season; no more beer or cider will be sold on or near the grounds, as it is found that neither word nor honor is above suspicion.

Whole number of entries, 977; assets: old fair grounds, \$5,000; cash on hand, \$1,968; total assets, \$6,968. Membership, 280. The smallness of this number is owing to the sale of day tickets, and the inability to attend to the duty at the right moment, and not to any lack of interest.

In conclusion: It having become absolutely necessary that larger and more commodious lands be had, the Directors, at the close of the fall fair, decided to purchase at once a long looked at and much coveted tract of forty acres, one mile north of Troy, and admirably adapted to the purpose. This purpose was carried into effect without any delay.

MONROE COUNTY.

The twentieth annual Fair of the Monroe County Agricultural Society was held on the Fair-grounds, at Woodsfield, on the 27th, 28th and 29th days of September, 1871.

The Fair this year was a success, not only in the promotion of the objects of the Society, but financially. The attendance was very good, and the display, in almost every department, was much better than that of last year. The exhibition of stock, especially of horses and cattle, was much larger and finer than usual, and the display in the fruit and vegetable departments far surpassed, both in quantity and quality, that of former years. More attention was given to the arrangement of the articles in the Floral Hall than has been manifested in this department for several years; and great credit is due to the ladies and the managers of the hall for the good taste displayed in making this the chief attraction of our Fair.

The principal crops of the county, consisting of wheat, corn, oats and hay, will not be above an average. For further particulars of crops, etc., please refer to the abstract furnished by our county auditor to the Auditor of State, under the act of April 3, 1868. There was no competition on field crops. Number of members, 158.

As to the financial condition of the Society, reference is had to the report of the Treasurer, herewith sent, as also a printed list of premiums awarded.

MONTGOMERY COUNTY.

The eighteenth annual Fair of the Montgomery County Agricultural Society and Farmers' Club was held on the Society's grounds, in the city of Dayton, on the 5th, 6th, 7th and 8th of September, 1871.

Like many of its predecessors, it was not a success in the exhibition (if I may except the horticultural and mechanical departments,) nor in the attendance; consequently proved a failure financially.

Much had been hoped from the fact that, more than a year since, a Farmers' Club was organized within the Agricultural Society, the monthly meetings of which having been largely attended, and a deep interest taken in the Society, but we were sadly disappointed.

It may be well to give you the *reason assigned* for this failure, by nearly all of our farmers, for their non-attendance.

Tobacco, you are no doubt aware, has got to be the leading crop of Montgomery county; that is, it is the crop that brings us the largest amount of money. You will probably be surprised when we tell you that the crop of tobacco grown in our county in 1871 will reach 30,000 cases, of 350 pounds to the case, making 10,500,000 pounds, at 10 cents (which is about an average of what it will bring,) making considerably over one million dollars cash our farmers will receive for the tobacco grown by them the past year; which amount is much less than was realized for the crop of tobacco of 1870; the crop of that year being less in quantity though much better in quality, and brought nearly double the price per pound.

Well, it so happened, that in consequence of the early season of holding our Fair, being just at the time when our farmers were cutting and shedding their immense crops of tobacco, and there being a strong probability of frost at the time, the hurry of getting in their crop was so great, that they could not take even a day to attend the Fair;

better, they said, could they have attended in the midst of their wheat harvest. This, no doubt, will teach us a lesson, and in the future our fairs will be held the latter part of September or first of October, when we hope to have better success.

Total number of entries, 455; number of members, 300.

It would probably be well to state that, for once in many years, the apple crop of our county was large in quantity and very fine in quality, being comparatively free from marks of insects.

The display of fruits at our Fair was very fine indeed in apples, pears and grapes, and the display of flowers was creditable to our florists; so was that of agricultural implements; it could not well be otherwise than good, Dayton being one of the principal manufacturing cities in the West.

The display of hogs was good; that of cattle and sheep not so numerous, though good in quality.

Agricultural products were almost a total failure, for the reason assigned above.

The vegetable garden was well represented; the largest cabbages we ever saw were there to be seen.

The ring exercises were good each day of the Fair. Large premiums were not offered for fast horses. The horses entered were from this county, and the time made on the track satisfied us that we need not offer large premiums to induce foreign horses to be brought here, as we have them at home, fast enough to make the track an attractive feature of our fairs.

Our Society, having been weighed down with debts for many years, we are pleased to say is now square with the world, and a balance in its treasury, which is, after all, a happy way to be in.

MORGAN COUNTY.

The nineteenth annual fair of the Morgan County Agricultural Society was held on the 27th, 28th and 29th of September, 1871, at the grounds of the Society, contiguous to McConnellsville, and (to use the oft-repeated expression which it has been our good fortune to chronicle during many of the six successive years just passed) was the largest and most completely successful fair ever held in the county. In point of attendance, receipts and general features, it far surpassed any former exhibition of the Society, and, although highly gratifying to the management, yet the success and interest manifested, was somewhat surprising, as we supposed the acme had been attained, at the previous fair, and were fearful lest this exhibition should not prove as prosperous as the preceding one. But in this we were agreeably disappointed.

The Society is steadily carving its reputation for usefulness, and enhancing the agricultural interests of the county, by stimulating and encouraging the legitimate labor of the husbandman, and, if well managed in the future, will continue to be a power for good which will permeate all classes of labor, science, art, etc.

The weather was good throughout the fair, which is a necessary condition to success in our exhibitions in consequence of the limited capacity of our exhibiting halls, which are the only places of shelter upon the grounds for the people in attendance.

The display in all the departments was excellent, while the industries of the county were unusually well represented. The manufacturing interests were more extensively aroused than ever before, and seemed to appreciate the efforts put forth by the Board to

encourage them in exhibiting the products of their skill, and giving the farmer and others an opportunity of examining the labor-saving machinery of this enterprising and enlightened age.

The number of horses on exhibition was unusually large—more than could be accommodated with stalls—and in some of the subdivisions of this class, were more numerous than ever before, while probably the quality was not above the average. This class of animals are more numerously exhibited at our fair than any other kind, and, as a consequence, greater provision has been made for them. It is believed they outnumber all other classes of animals combined at our fairs. Our cattle display was good, with more Thoroughbreds on the grounds than usual, while the graded stock was not of a flattering character. Hogs—good and large display, and ahead of last year, notwithstanding the depreciated market value of this class of stock. Our farmers are paying more attention to the breeding of the better grades of swine than ever before, and we have some splendid specimens in our county. The sheep exhibition was very fine, with a greater variety of grades than ever before, but chiefly confined to the Merinos and Leicesters. The long-wooled sheep are being introduced in our county quite extensively. Mules were more numerous than usual, with a good display of the several ages, and of good sizes and styles.

Our cereal crops, during the past year, have been generally good, and the "tillers of the soil" rewarded for their labors in the substantial manner which encourages them to renewed exertions. Our wheat crop was not as good as was anticipated from the promise it gave early in the season, as only a few days before it was ready to harvest, in some localities, the stalk became affected near the head, and bent over in drooping form, while the grain was somewhat injured. In other localities it was a little injured by the fly, but not to any great extent. The crop was not as good as it was last year, although in some parts of the county the yield was unusually good. More acres have been sown in wheat this fall than there were last year, or has been for many years.

Corn has been a prolific crop in this county the past season—a large number of acres having been planted, and the yield bountiful and of a superior character.

The hay crop was short, but the weather was good for curing and storing that which was produced.

The largest crop of oats that has been raised in this county for years, was harvested this season. The yield was above the average, and of excellent quality. The Norway oats, which have been sown in this county, in many localities, has proved a failure, but whether from the dishonesty of the dealers, who may have palmed off a spurious article upon our farmers, the inferior quality of the grain, or its lack of adaptation to our climate and soil, are matters not yet determined by us.

The potato crop was good, but not a large yield, yet of generally fine quality and excellent flavor. The Colorado potato bug, which preyed upon the crop last year, made its appearance again this season in increased numbers in some localities, particularly about the county seat, but its ravages were not as general as was feared they might be.

Our fruit crop has been excellent, and much larger than it was last year. Apples have yielded well, and generally good and perfect, although there are some complaints of early decay in the winter apples. The peach crop was good, and of excellent character. Plums yielded prolifically, and were above an average crop. Many grapes are raised near the county seat, and the vines produced well this season.

The weather was somewhat dry throughout the year, but we were favored with seasonable showers, which materially benefited the agricultural interests of the county. A little more rain the past fall would have been beneficial in enabling the husbandman to

break up the ground earlier, preparatory to seeding, yet is believed that delay only was occasioned thereby.

The financial condition of the Society at the beginning of the year was good, and has steadily augmented its resources, until we now close up the present year with a good balance in the treasury. The Society is in the most flourishing condition it has ever attained since its organization, and has acquired a reputation second to none in this Congressional district.

The receipts from the fair were \$1,684.75—an amount greater than ever realized before. We have paid all the premiums awarded, together with the expenses of holding the fair, and have a balance on hand of \$396.36. The number of members was 783, and the number of entries 1,005—both being largely in excess of previous years, and the entries greater than ever known before in the history of the Society.

Our grounds were enlarged during the past year, and a good and substantial fence built nearly around the entire inclosure. We will now have more room to spread out, and expect to make a half-mile track upon the grounds the coming year—a change that has been long desired by our lovers of speed in the horse.

The principal crops raised in this county are wheat, corn, oats, hay and potatoes. Hereto, I annex a statement of some raised, with the average yield per acre in 1870:

	Am't raised.	Av. yield.
Wheat, bush.....	185,701	11½
Rye, "	1,541	10 4-7
Buckwheat, "	1,240	11 2-5
Oats, "	106,502	19½
Barley, "	335	12 8-9
Corn, "	615,555	33½
Hay—Timothy, tons.....	16,190	1 1-12
" Clover, "	2,382	1
Flax, lbs. fiber	200	.....
Potatoes, bush.....	27,868	57
Tobacco, lbs.....	488,335	846½
Sorghum, galls. syrup.....	40,127	113½
Maple Sugar, lbs.....	340	.....
" Syrup, galls.....	413	.....
Sweet Potatoes, bush.....	5,148	85 1-6
Apples, "	43,629	.....
Peaches, "	1,959	.....
Pears, "	637	.....
No. of acres in orchards, 4,355.		

MORROW COUNTY.

There were two entries of field crops; but a failure, on the part of those making entries, to file their required report of tillage, etc.

The Society is in a healthy condition. Our county is small; and, while we fail to get up that enthusiasm manifested in some counties, by want, perhaps, of large purses for trotting and running, yet all branches of industry are well represented, and each receive their due share of importance, making our fairs much more interesting to the masses than the more spirited trotting circles.

Our members number 234.

Our county being reasonably adapted for the production of all kinds of grains and fruits raised in Central and Northern Ohio, our productions are of that general class of grains, seeds, fruits, and stock of all kinds, usually raised and grown in localities of this kind. Fair crops and prices have prevailed, notwithstanding the severe drouth that prevailed during the summer and fall, and continues to the present time. No destructive insects have appeared among us to materially injure us.

NOBLE COUNTY.

The nineteenth annual Fair of Noble county was held on the Society's grounds, at Sarahsville, on the 4th, 5th and 6th of October, 1871. This year has been a full average one in the county. The principal crops grown in this county are wheat, oats, corn and tobacco, and some sorghum. The wheat crop, this year, was a short one; corn, a very large crop on bottom land—we had the best yield for many years; oats good; tobacco, an average crop; potatoes good; hay, both clover and timothy, good; apple crop very light; peach crop good. The exhibition of stock was good, and of good stock; the show of horses was very fine; of cattle, sheep and hogs, the show was not so good.

Our hall was very well filled by the ladies, for which we give them great praise.

The Society numbers now 204 members, an increase of some twenty-five, which tells well for our Society; and it is expected by its friends that it will increase next year.

OTTAWA COUNTY.

The Ottawa County Annual Fair was held at Port Clinton (the county seat), the 20th, 21st and 22d of September, A. D. 1871. The first day, and the second until about 10 o'clock, was cold and disagreeable, which was quite a drawback in this, to wit: the entries were much smaller, and the attendance also much smaller, than would have been had it been warmer weather; still it was a decided success over last year—the receipts last year being \$137.25, and this year \$339.45, and would in all probability have reached \$500 had the weather been fine.

The horse department was the largest and best ever exhibited in the county, which was admitted by every one, there being 79 entries. There has been a great improvement in the department of agriculture in the last few years, and still increases. Also the cattle department was the largest and best ever exhibited in this county, and the interest in this department is increasing very fast in our county—the number of entries being 35. The sheep department was very good (but being a few entries), and would be hard to beat anywhere. The number of entries amounted to 30. The swine department was good, and is still on the increase each year, our citizens taking more interest each year, and will continue to improve their stock. Entries amounting to 10—entries was small. The entries of agricultural implements were small, but good, and I think will continue to increase. Number of entries, 18.

The sixth department, dairy products and provisions, was quite small this year, there not being that interest faken that should be, but think it is increasing. The number of entries amounted to 70. The department of vegetables was very good, and would have been a great deal better had the fair been two weeks later. Number of entries, 72.

The grain samples were excellent, and quite a good many entries for a small portion of the county to furnish, being a low, flat country.

The department of fruit is hard to beat, but would have been much better had it been a week or two later. Number of entries, 88. The entries of grapes were small this year, the crop being generally poor to what it was last year, although there was quite a good crop. Number of entries, 14.

The department of domestic manufactures was very small, compared with other years, not speaking of last year, but what there was were good. Number of entries, 14. The departments of ornamental and needle-work, fine arts, etc., was, as you can see, very small, consequently could not be a very grand show; but the articles were good, what there was, being 48 entries.

The number of members of the Society amounts to 210.

The prospect for the year of 1872 looks good, and I think, without doubt, a great deal more interest will be taken to make it a success over former fairs.

The crops throughout the county were never better; the wheat crop was good everywhere; and I can safely say the corn crop was never known to be so heavy and good, and such quantities raised as the last year; and in fact there were large crops of every kind, and is still on the increase every year, and no doubt will continue to increase, as our county is improving every year, a great portion of it being timbered land.

There was not that interest taken this year on the part of some of the directors as should have been to make the fair interesting and beneficial generally.

The principal crops raised in the county are wheat, corn, oats and potatoes; some rye and barley are also raised, but in small quantities; also sorghum. Amount of wheat raised, 95,000 bushels; average yield per acre, 15 bushels. Amount of corn raised, 375,000 bushels; the average yield per acre, 50 bushels. Amount of oats raised, 185,000 bushels; the average yield per acre, 30 bushels. Amount of potatoes raised, 75,000 bushels; the average yield per acre, 75 bushels. Amount of rye raised, 900 bushels; the average yield per acre, 15 bushels. Amount of barley raised, 275 bushels; the average yield per acre, 12 bushels. Number of gallons of sorghum produced, 10,000; number of gallons per acre, 85 gallons. Amount of buckwheat, 3,500 bushels; average yield per acre, 15 bushels.

The Society paid only about 70 per cent. of its premiums, but hope to pay, or be able to pay, the full amount next year.

PERRY COUNTY.

The Perry County Agricultural Society held its third annual fair, on the fair grounds of the Society, near New Lexington, on the 4th, 5th and 6th days of October, 1871. The weather was extremely dry, and blinding clouds of dust were flying all the time, which made it quite disagreeable. Notwithstanding this, the attendance was equal to that of either of the former fairs of the Society, and would have been much larger had not the fairs of the adjoining counties of Licking and Hocking been held at the same time.

The total number of entries was 608; and the receipts, from all sources, amounted to nearly \$1,900. The amount paid in premiums was \$950.

The show of horses, cattle, sheep and hogs was very fine. Vegetable hall was filled to overflowing with the finest specimens of the productions of the soil, and would have done credit to any county in the State. The ladies were on hand with their productions in

quite large numbers, and made a grand show in the hall prepared for their reception. In the bread and butter department the contest was quite lively, and the specimens were so nearly alike that the awarding committees found considerable trouble in deciding. In manufactures and implements the display was larger than at previous fairs, and all the specimens of the very best quality.

The display of apples was very fine; pears and peaches few in number, owing to the lateness of the season. The entries of grapes were small in number, but the specimens of fruit were excellent in quality.

The principal crops raised in the county are wheat, corn, oats and potatoes. The extremely dry weather in some parts of the county affected the different crops to such an extent that the average production of each may fall a little short of that of former years.

The Auditor's report will show the amount of the productions of the various crops of the county, and the number and value of farm stock, etc., and it will not be inserted in this report.

The railroad interest in Perry county is becoming quite extensive, and the mineral wealth of the county is unsurpassed, and is being rapidly developed, and must greatly increase the population in the south part of the county.

The agricultural interests of the county are improving, as can be seen by the improved manner of putting in and securing farm crops, and by the introduction of fine cattle, horses, sheep and hogs, and the better care and management of them, since our Society has been in existence; and it is hoped that this spirit of improvement may continue.

No competition for farm crops this year.

Number of members belonging to the Society, 600.

PICKAWAY COUNTY.

The twentieth annual exhibition of the Pickaway County Agricultural Society was held at Circleville, on Tuesday, Wednesday, Thursday and Friday, September 19th, 20th, 21st and 22d, 1871, and was a gratifying success in almost every respect; and financially more than realized the expectations of the management. The aggregate of entries was slightly in excess of last year. The two last days the attendance was immense, estimated as the largest assemblage of people ever congregated on the grounds.

The gross receipts of the fair amounted to \$3,236.

The exhibition, in all its departments, was fully up to the best county fairs. The display of horses, cattle, sheep and swine was excellent. There were more and better hogs than ever before exhibited in this county. In the draught, roadster, and all other work classes of horses, the competition was lively, and many splendid animals were shown. In the thoroughbred class, the entries were few. The trials of speed were exciting and highly interesting. There was a fine display of thoroughbred cattle. The premium for best herd, owned by one person, was awarded to George Wood, and the premium for best herd, owned by exhibitor in county, to N. W. Perrill. Both these herds were good ones. In the sweepstakes, George W. Gregg was awarded the premium for the best bull of any age, and George Wood for best cow or heifer.

In the ladies' department there was not as full a display as for several years past; but yet hard to beat—equal to the average of fairs. The \$15 premium for best varieties of preserves was given to Mrs. T. W. Jones, of Scioto township, and the \$10 premium for

the best varieties of jellies to Miss Kate Decker, of Madison township. For the \$10 premium, offered for the best loaf of wheat bread, there were fourteen entries, and the award was made to Miss Kate Decker. For the butter premium of \$5 there were nine entries, and Mrs. George Wood received the award.

The display of fruit, of all kinds, was first rate. S. D. Reigel, who is a successful grape grower, near Adelphi, exhibited a choice lot of grapes, of the best varieties.

Mechanics' hall was well filled, and the elegant carriages and buggies attracted much attention and were generally admired.

TOURNAMENT.—On Friday afternoon sixteen gallant knights, under the marshalship of Dr. F. M. Black, entered the arena, and contended for the mastery, resulting as follows: First prize, saddle horse, William Fuller, Jr., Darbyville; second prize, saddle, James R. Bolin, Circleville; third prize, bridle, whip and spurs, B. J. Lancaster, Circleville.

During the past two years substantial improvements have been made on the grounds of the Society, and others are in contemplation.

CROPS.—Wheat excellent and yield good; corn, large crop; oats good; barley, small crop—not much grown in this county; potatoes, fair crop, notwithstanding the ravages of the Colorado bug; fruit, partial crop.

As an evidence of the inexhaustible fertility of the Scioto Valley, and adaptation to corn growing, I will mention that eighteen acres of William Renick's Westfall farm, in this county, known as the "Old King Field," has grown corn for *sixty-five successive years*, having been first planted in corn in the spring of 1807, and every year since. This year the yield was sixty bushels to the acre. Several hundred acres of broom corn were planted this season by O. E. Niles, E. & J. P. Smith and John Fleming, producing a large yield.

The hog crop of this county, the present year, is large and mostly heavy weights, a large portion finding a home market. Messrs. Ruggles and John Grace packed about 17,000. Price from \$3.80 to \$4 for greater portion.

The unprecedented drouth, extending through the summer and fall, caused much inconvenience to farmers in watering stock.

A full acreage of wheat has been sown this fall.

The "Darby Farmers' Club" is in a flourishing condition, numbering over one hundred members, and has proved a social and practical benefit to all concerned.

PORTAGE COUNTY.

The twenty-sixth annual Fair of the Portage County Agricultural Society was held on the 25th, 26th, and 27th days of September, 1871, at the fair-grounds near Ravenna. Much more interest was manifested in the success of the Fair and Society than for ten years past. The attendance at the Fair was good, notwithstanding all the days of the Fair were very cold and disagreeable.

The exhibition of Durham cattle was never excelled, or even equaled, in the county before. The show of poultry was never equaled, as there are a great many breeders of fancy fowls in the county, and especially in Ravenna. There was also a good show of all kinds of live-stock. The exhibition in Floral Hall was not as good as last year. The exhibition in Vegetable Hall would be hard to surpass. There were no destructive insects in the county this year to interfere with the crops to any great extent. It is said that the Colorado potato bug made its appearance, but it could not be learned that they were in sufficient numbers to do any injury.

Butter and cheese are still the staple products of Portage county, and threaten to absorb and swallow up every other agricultural interest; and whether the bending of all interests to that of milk is calculated to advance the general prosperity of the county, add to its population, and increase wealth and intelligence, is a question that admits of much doubt in the minds of many of the best citizens.

It is difficult to ascertain the average of the yield of crops for the last year, and will not be attempted, except to say that crops of all kinds, except buckwheat, were good, and some kinds much above the average.

PREBLE COUNTY.

The Preble County Agricultural Society held its twentieth annual Fair on Tuesday, Wednesday, Thursday, and Friday, September 26th to 29th, inclusive, A. D. 1870. There appeared to be an increased interest manifest, and the prospects of its usefulness and progress flattering, the total number of entries made being near thirty-two hundred, showing a fair increase over last year. There appears to be a steady-growing interest in behalf of our Society on the part of the citizens generally; this is manifest by the attendance, and also the number of entries in the different departments.

In the departments of horses and cattle our show was very fine, probably better than it ever was before in the county. This, however, was not altogether of stock from our own county. Persons from the adjoining counties came with their stock and placed them upon exhibition as competitors against Old Preble, and in several instances were successful in carrying away the red ribbons. Much as we may regret it that such is the fact, it is all right, and if our people in the future do not wish to lose the premiums, they must be sure they have the stock. I believe it would add to the advantage of our Fairs if we could manage to get up more strife between the different counties, as rivals in the show, so that an exchange of stock on exhibition at the different Fairs would be made; but at the same time we do not need any feelings of hatred between the citizens of the different counties. The membership of our Society is about 1,750.

For the past five years our Society has been burdened with an indebtedness so as to deprive the board of making a premium list such as they would have done under different circumstances; but the matter has been kept before the people in its true light, and in due time the people acted, through the county commissioners, after having secured the passage of a special law for that purpose. A levy was made for the defraying of the debt, amounting to \$1,800, which will now enable the Society to improve the ground, and make it not only a place of usefulness, but of pleasure.

There are no reports received from field crops yet. The wheat crop in the county was very good; corn crop, more than an average—taking into consideration the amount of the old crop on hand, it makes an extraordinary heavy crop; barley, good; oat crop, very good; flax, light; the tobacco crop, for the number of acres, large; potato crop moderate in some localities. The crop was badly damaged by the Colorado bug. The peach crop was not very heavy; the apple crop was very good.

We have in this county, in successful operation, eight drain-tile manufactories, and all their efforts cannot supply the demand. Every year the farmers become the more convinced of the usefulness of draining the ground.

PUTNAM COUNTY.

At our annual Fair, held on the 27th, 28th and 29th of September, 1871, there were awarded three hundred and forty-two premiums, amounting to three hundred and forty-

four dollars and forty cents. Of this sum, \$315.70 was drawn from the treasury of the Society.

There were this year six hundred and three entries made, being an increase of sixty-six over the number of last year.

There were enrolled as members, during the present year, three hundred and eighteen persons, being an increase of sixty-one over the number last year.

On field crops there was no competition, there being but one entry made, and no report of the same made to the Secretary.

The crops, the present year, have been the best raised for a number of years; while the yield of grain and roots has been immense, and the quality excellent.

The fruit crop has not been as large as that of former years, the orchards being stripped of their foliage, early in the season, by a species of caterpillar, which prevented the trees from bearing the quantity or quality of fruit produced last year.

The Colorado potato bug made its appearance in this county early in the spring, but only worked upon the earlier varieties of potatoes, and only partially injured them. The late potatoes were not damaged in the least, and the crop is a very fair average. A small bug worked to a considerable extent upon the sweet potato vines, and, in some localities, almost destroyed the crop.

The principal crops raised this season were corn, wheat, oats, rye and clover seed. But little barley was raised in the county. Some tobacco was raised this season, and the crop is excellent, comparing favorably with the very best raised in the State.

There was on exhibition at the fair, and at other places, a number of stalks of corn measuring 18 ft. 2 inches in length, and having upon each stalk two large and well-filled ears of corn. This corn came from different parts of the county.

Our fair was the best ever held in the county, and was a decided improvement on fairs of other years. The number of entries, the membership, and the attendance being larger than ever before, while the articles and animals on exhibition were superior to those of former years.

The membership of the Society, owing to some local difficulties, is confined almost exclusively to four townships in the county, the other eleven townships taking but little interest in the Society. However, the present management are laboring to create an interest in the Society in every township in the county, and hope to succeed in their undertaking.

Our Society is now on the road to success, and we expect to double its membership during the coming year, as we now have our grounds in complete order, and have the necessary facilities for accommodating exhibitors and others. We have also substantial buildings which will last for many years, and, therefore, can hereafter increase the amount offered for premiums, and thereby induce a greater interest in our annual exhibitions.

RICHLAND COUNTY.

The annual fair was held on September 19th, 20th, 21st and 22d, and was the best attended that has ever been held in the county. The grounds are having fine improvements added each year, and we think will already compare favorably with any in the State. Being located so near the city, they have rapidly increased in value, and are now worth, we should say, three times what they were purchased for. By another year the Holly Water Works will be finished and in operation by the city, and it is the intention of the Board to take advantage of this to convey a supply of water to the grounds for

useful, and to erect several fountains for ornamental purposes. The number of members is now 96, and the Society is in as flourishing a condition as its most sanguine friends could expect. There is still somewhat of a debt due for the general improvement of the grounds, but it is in such shape that it can be met and paid within a year or two.

The principal crops raised are wheat, oats and corn, but we have no data at hands to estimate the amount of each raised the last year. Suffice it to say that the harvest was abundant, with more than an average yield of these products.

The potato bug was prevalent in some parts of the county, but did not prevail to general extent, and the potato crop was one of the largest ever raised in the county.

We are pleased to notice the fact that several Farmers' Clubs have been organized in the county, the one in Springfield township, particularly, being worthy of mention. We think we are justified in saying that the agricultural interests of the county are in a healthy and prosperous condition.

ROSS COUNTY.

This Society was organized in March, 1870, and leased for the term of five years about forty-five acres of ground adjoining the city of Chillicothe. It has expended in building halls, shedding, and improving the grounds, about \$6,500. The improvements are all of substantial character, and the grounds will compare favorably with any fair grounds in the State.

Our annual fair for 1871 was held September 12th, 13th, 14th and 15th, and on account of rain, was continued over the 16th.

The number of members exeeed 300. The aggregate of premiums offered amounts to \$2,500; number of entries, 1,264; amount of premiums paid, \$1,988.50. The expense of the Society, including a debt of last year of \$370.16, amounts to \$6,659.12; receipts from all sources, \$4,893.77; leaving the Society in debt \$1,763.45, which has been promptly advanced to the Society by the managers. Our receipts this year, owing to rain and report of small-pox near the grounds, did not come up to our expectations; but, notwithstanding that, we paid all premiums and expenses and eleven hundred dollars on permanent improvements, and with reasonable success next year will be able to pay all our indebtedness.

The show of horses was very extensive and ereditable. Cattle was excellent in quantity and quality especially. This being the pioneer county of the State in producing thoroughbred cattle, it gave a new life to the dormant love of fine cattle among our farmers, and no doubt will soon place us where we belong—in the front ranks of cattle breeders of the State. It is no more than just to mention Mr. R. R. Seymour and his fine herd (exhibited at the last State Fair), also Mr. George Grimes; these gentlemen exhibited cattle that would be a credit to any fair in the world. The show of hogs was, without doubt, as good as the best in quantity and quality. "Elm-peelers" in this county are very scarce.

Mechanics' Hall was crowded in all its departments, a credit to our manufactures and dealers; the display of carriages and wagons made in this county was very fine.

Horticultural and Floral Hall, under the management of the live and flourishing Horticultural Society, was a grand success. The display of grapes was perfect; peaches good, being late in the season; apples fine; farm and garden products very large, and excellent display. It was a surprise to ourselves to find our county contained such a large and prosperous interest in the horticultural products. The hall was tastefully

arranged and decorated, and with the elegant, new fountain was a pleasing sight, and pronounced by all the handsomest and best horticultural display ever seen in Southern Ohio.

The wheat crop of the county made about three-fourths of an average crop; corn a fair average crop, owing to the dry weather; hay, oats, potatoes, etc., not as good as usual.

Our fruit was good, with the exception of apples. The exports were about as follows: 10,000 bush. peaches, 2,200 bush. plums, 1,000 bush. raspberries, 150 tons grapes. Strawberries, a very short crop.

No entries made in field crops.

SANDUSKY COUNTY.

The Sandusky County Agricultural Society held its nineteenth annual fair on their new grounds, at Fremont, October 4th, 5th, 6th and 7th, 1871, which proved a decided success, being the largest fair ever held in this county. The Society is now the owner of thirty acres of good land, covered with native forest trees, and situated about three-quarters of a mile from the business part of the city of Fremont, and commanding a fine view of the city and surrounding country.

Our buildings are large, commodious and well constructed, and rank with the best county fair buildings in the State.

There seems to be quite an awakening up of the people of the county to the importance of the usefulness of agricultural societies, which was fully demonstrated by the interest taken in our last annual exhibition, it having excelled all others in quality, quantity and variety of the various kinds of stock, farm products and mechanical implements.

Our fine art hall was tastefully arranged and well filled with useful and fancy articles, and was, in all respects, creditable to the ladies of the county. The display in domestic, mechanics' and fruit halls was all that could be expected, and in quality was never surpassed. There was a large display of agricultural implements, carriages and wagons of all descriptions, and all of superior workmanship. The exhibition of horses deserves especial mention, and was pronounced by competent judges to be equal to any exhibition ever seen at any county fair. The display of cattle, sheep, hogs and poultry was good, and generally of an improved character.

Number of members, 1,002; number of entries, 1,560.

The annual address was delivered on the third day of the fair by Hon. Wm. Lang, President of the State Board of Agriculture, and was listened to by a large and attentive audience.

The season of 1871 has been an average one in this county. The principal crops grown are wheat, corn, oats, potatoes, clover-seed and hay. Average yield per acre: Wheat, 15 bushels; corn, 40 bushels; oats, a large crop, 50 bushels; potatoes, a fine crop, 150 bushels. No insects have injured the crops to any great extent.

The Sandusky County Agricultural Society has become a permanent institution, and is in a thriving condition. The success of the nineteenth annual exhibition has given the friends of the association renewed courage, and they are determined that the next fair shall excel in every particular.

SENECA COUNTY.

The nineteenth year of history of this Society has been, in all respects, satisfactory.

By an expenditure of \$2,000 during the year, we inclosed considerable stabling, and covered all open stalls and pens, besides providing elevated seating for two thousand persons, all roofed, and putting one-half mile driving track in perfect condition. Improvement now in progress, to cost \$600, will make our grounds equal to any in the State.

No special effort has ever been made to obtain a large membership, and they now count but two hundred and sixty-one.

During the first week of June we held a Stock Fair, continuing three days, upon which we made a clear profit of \$658.45. The exhibition was large, and contained some of the best stock of our county, as well as many fine thoroughbred horses, cattle, sheep and swine from remote parts of the State. There was a splendid display of agricultural implements and machines, invited without premiums.

There is a growing interest manifested in our fairs, and their influence is witnessed in the marked improvement of our domestic animals, and the eagerness with which our farmers are seeking the most approved implements. We have better farming, and larger yields, than ever before, and all departments of productive industry in the county were never so prosperous.

The Colorado potato bug wrought some damage to our potato crop, and our apples were injured by worms that, in some localities, devoured the foliage of forest and fruit trees.

The acreage of wheat was near 51,000 acres, yielding, probably, 19 bushels per acre; whilst our 32,000 acres of corn must have yielded 70 bushels per acre. The 22,000 acres of oats grown made the extraordinary yield of 65 bushels per acre. Of potatoes, not over 1,100 acres were planted, yielding 80 bushels per acre, of the best quality.

Our orcharding amounts to near 7,000 acres, and the yield was not probably over 40 bushels per acre.

The yield of our meadows was good, and pasturage was abundant and nutritious. The rain-fall has been unprecedentedly light, but seasonable showers in June, and heavy rains in August, kept the ground in good condition and developed the crops.

Encouraged by the success of our first experiment, we shall hold our second Stock Fair on the 4th to 7th days of June next, with a revised premium list, amounting to \$20,000. For the future of our Society everything is encouraging.

SHELBY COUNTY.

The Shelby County Agricultural Institute held their twelfth annual fair September 19th, 20th, 21st and 22d, 1871, on their beautiful grounds of the Institute, located adjoining the town of Sidney, which proved to be the best that has been held in the county. The grounds has been very much improved from last year; quite a number of evergreens has been planted, a new judges' stand built, and the track improved, making it one among the best in the State. The number of entries, attendance, and the interest in the fair far exceeded that of any other previous year. Premiums to the amount of eleven hundred dollars were awarded. This year there was no competition on crops.

The display of horses was good, particularly those for general purposes, draft and roadsters. The show of cattle was good, particularly that of Shorthorns, there being several thoroughbred herds. The exhibition of sheep was good—an improvement over last year. The display of swine was never better than this year, there being on exhibition many fine imported thoroughbred hogs. Poultry was well represented with different kinds far superior to any heretofore. The display of grains, fruits and vegetables was excellent. Floral hall, the ladies' department, was good and well arranged. The display in the musical department was better than heretofore, which added much to the enjoyment of those present. The principal crops raised in the county are corn and wheat. Corn averaged about forty bushels to the acre; wheat, about fourteen bushels. Fruits of all kinds were abundant, with the exception of peaches—but few in the county. The crop of apples was larger than has been known for several years. Potatoes, a full crop; sweet potatoes very good.

The display of agricultural implements was better than heretofore. The Institute numbers two hundred and twenty-five members.

STARK COUNTY.

The Stark County Agricultural Society held their twenty-second annual fair in the city of Canton, September 26th, 27th, 28th and 29th, 1871. Owing to rainy, cold weather the second and third days, the attendance was not so good as formerly, and for this reason our gate receipts were comparatively small. But, so far as the exhibition was concerned, this was equal, if not superior, to any former fair held by this Society. There were in all 1,152 entries. The show of horses was very good, and also of cattle—better than for several years before, and of finer quality; and the same may be said of hogs. There was only a few sheep on exhibition, but of good quality. The exhibition of farm machinery was superior in quality and quantity to any ever shown on our grounds. "Old Molly Stark" has good cause to be proud of her manufactories. The names of many of her reapers, mowers, separators and plows are familiar to the farmers all over the United States. On the all-important subject of manufacturing we feel proud to state that our county, in proportion to the population, is ahead of any other in the State.

The show in floral hall was very good. Here we found articles of various kinds, from the finest specimens of needle-work to the most useful article of comfort in the household, and from the most delicate and delicious pastry to the old-fashioned, substantial loaf of bread, which is now baked in the labor-saving cook stove, instead of baking it as our mothers used to do, in the old-fashioned Dutch oven, on the hearth, with live coals from the huge wood fire that burned in the chimney; also all the varieties of canned fruits, preserves, dried fruits, jellies and pickles in abundance. Then the fine arts were very well represented; oil paintings, chromos (these not all the product of Stark county, for there was some very fine ones exhibited by Dr. Hartshorn, the worthy President of Mt. Union College, purchased by him in Italy; the Doctor also had on exhibition, for the entertainment of visitors, some rare specimens of stuffed birds and animals belonging to the College Museum,) and photographs, which were a credit to the artist who took them and exhibited them.

The farmer brought the product of honest toil (without which agricultural fairs would be a failure), in rich abundance, and finer specimens of wheat, rye, oats, barley, corn,

potatoes, squashes and melons is not often, if ever, seen in this or any other county. The scarcity of fruits was remarkable, although there were some fine specimens on exhibition of apples, pears, peaches, quinces, grapes and plums. The apple crop was very poor generally, were knotty and ill-shaped, and did not keep very well.

Our Society numbers 395 members, is in good condition; owns thirty acres of valuable land within the corporate limits of the city of Canton. During the year we put up a dining hall, at a cost of about two thousand dollars, and we still need a mechanics' hall and a vegetable hall, to make our accommodations to exhibitors what they should be. Our Society is still in debt about six thousand dollars. This was incurred in order to enlarge our old grounds, which were entirely too small. We hope our County Commissioners will favorably consider our case, and again give us a helping hand, relieve us of debt, and enable us to offer greater inducements for improvements to our patrons in the shape of smaller charges, if not in larger premiums; but, while we are in debt, our energies as well as our resources are necessarily limited, and we are compelled to confine our operations within our means, and, if possible, pay a small amount of our indebtedness.

We have no correct data from which to make even an estimate of the amount of the different kinds of grain raised in this county.

We hear no complaint of destructive insects the past year.

Some of our good people object to the way our fair has been conducted. To use their own expression, there is "too much horse." While there may be an error in this direction, our board has tried to confine the horse show to what they believe to be right in the premises, intentionally offending none. We believe it the duty of every good citizen of Stark county to sustain, to the best of his ability, the manifold interest of the Agricultural Society, and very many do this; but we are sorry to say that there are some who try to discourage, and, when opportunity offers, throw on the cold water.

SUMMIT COUNTY.

Our Fair was held on the 3d, 4th, 5th, and 6th of October, on the grounds occupied by us, under a lease for several years past. For some weeks prior to the holding of our Fair we were fearful of the result, owing to the fact that a report was freely circulated through the county, as well as the counties around us, that our city was suffering with the small-pox, with deaths ranging from eight to ten every day, in consequence of which the prospect was anything but flattering. But the few who ventured on to the grounds on the first day, found the report to be false; and through them and the officers and directors, and by sending out hand-bills, the truth found its way throughout the county, though from the adjoining counties many were deterred from coming, not learning the true state of affairs.

This was our twenty-second annual Fair, and we can safely say was the most successful of any Fair ever held in our county, and its results were in every way satisfactory. Our police regulations were so perfect under the management of James Burlison, as chief, that no disturbance occurred on the grounds. Order and sobriety were the rule, and though we had more than the usual number of shows, exhibitions of various kinds, and places of amusement, yet all passed off quietly. Our dining halls and places for refreshment were abundantly supplied, and with the best the country afforded, and the serving was done with promptness and with a pleasant smile.

There were held in the county two other local fairs, one in Richfield, on the west, and one in Twinsburgh, on the north line of the county. Both of them were well attended, and both resulted in entire success; and we hope for their continuance, for we are satisfied that the local fairs, (when not conducted in a spirit of rivalry,) are no detriment to our county Fair, as through them a spirit of emulation is excited, which creates a spirit of competition and results to the advantage of the County Society.

The exhibition of stock of all kinds was large, and of the best grades. The show of cattle, including Devons, Durhams, and Grades, far exceeded anything ever on our grounds before, and for this exhibition we are largely indebted to our friends from Richfield, and other western towns in our county, where very great attention is given to the raising of good cattle. In the north part of the county cheese-making is the principal business, and our farmers there look more for good milch cows than the raising of blooded stock. There are seventeen cheese factories in the county.

The show in the horse department was a most decided success, both in the quality and number of horses. The last few years show in our county a most decided improvement in all kinds of stock. The show of poultry was large and fine.

In the grain and vegetable departments we are ready, judging from the exhibition made, to compete with any county in the State, believing, as we do, that we cannot be beaten.

Owing to the excellent quality of the products and the variety on exhibition in these departments, it was in many instances very difficult for our committees to come to a satisfactory conclusion in the matter of awarding, but as the rivalry among exhibitors was in the true spirit, no unkind feelings were engendered.

The corn crop throughout the county is very heavy. The yield per acre was never before so large.

The competition in field crops was not such as was desired, only two competing, and these only on corn. The officers of the Society, the President, Treasurer, and Secretary, have visited the fields of the parties competing, and find the land upon which the corn was raised to be of about the same quality, and might with propriety be called second bottom land, both planted on sod ground, well prepared, the cultivation being about the same in both cases.

The report of the yield per acre has not as yet been submitted to us, with the proofs as required by our by-laws; consequently we are not at liberty to publish results.

In relation to the wheat crop we are safe in saying that the yield per acre throughout the county will not be less than twenty bushels, many fields reaching thirty-three and thirty-five bushels, while some fall below twenty; but wherever there was a falling below, in almost all cases it was owing to the "fly," and this was confined to early-sown wheat.

Our potato crop, though of excellent quality, was not as large as in some former years, owing to the dry weather just at the time of setting.

Our list of annual members numbers 1,170, but this by no means shows the number of visitors on the grounds. There was never so large a crowd upon our grounds as upon the third day of the Fair. The number of entries upon the Secretary's books was 1,454.

Our Hall was well filled with a fine display of the handiwork of our farmers' wives and daughters. Sewing and knitting machines abounded, and the representatives of the different styles were on hand to show the superiority of the one over the other.

All the various mechanical departments were fully represented, and the show in farming implements was more full and complete than ever before, thereby showing

hat while the mechanic finds full employment, the farmer, taking advantage of the mechanic's skill and inventive genius, reaps the benefit.

The Buckeye and Excelsior works were on hand with a full display of their most excellent mowers and reapers, as were also the various other establishments of the city of Akron, as well as of the county; and it is to establishments like those represented at the Fair that the county in a great measure is indebted for its material wealth. Our county in this respect is far in advance of most of the counties in the State, for almost every branch of mechanical industry is represented within her borders.

Our farming community is every year becoming more intelligent. They are a reading people, and thus learn from the experience of others. The adaptability of the various soils to the raising of different kinds of grains is better understood, as also what in the nature of manures will best stimulate their growth.

Our receipts from all sources during the time of the Fair were \$4,538.04. Our premiums amounted to about \$2,000. We have purchased new fair-grounds, of forty acres, so that when our present lease expires we shall no longer be compelled to pay rent. The new grounds were purchased at an expense of \$8,000, and are paid for, so that in the future we shall be able to be more liberal with our premiums.

In view of what has been accomplished we feel encouraged, and are confident that with proper management our Fairs may be made a great benefit to all our people, and so long as they are managed by the farmers of the country—are left free from political shackles—no disturbing element will interfere with good results. By these annual gatherings all are brought together, sociability and good feeling are created, and a new impulse is given to the energies of the people.

TRUMBULL COUNTY.

The twenty-sixth annual fair of the Trumbull County Agricultural Society was held on the grounds of the Society, at Warren, September 19th, 20th and 21st. The weather being pleasant throughout the fair, the attendance was unusually large.

In the horse department there were 200 entries; the quality of horses shown was good, averaging fully with that of any previous year. The number of entries in cattle was 134, and in point of quality, it was thought by many that they were superior to those of any former fair. The show of sheep, especially long wools, was large and of a superior quality. The other departments were well represented, and, on the whole, the fair of 1871 was a success, meeting the highest expectations of the Society and its efficient board of managers.

The financial condition of the Society is good. The total number of entries, 1302; number of members, 1713. The principal crops raised in the county are corn, oats, wheat, flax and potatoes. We have no means of ascertaining the amount of each raised in the county, but the crops, the past season, were fully on an average with those of former years.

The interest taken in the Society is steadily on the increase, and at no time in its history has the prospect been more flattering for its future usefulness than at present.

AMOUNT OF PREMIUMS AWARDED.

Class.	
1. Horses, all work.....	\$103 00
2. Carriage Horses and Roadsters	94 00
3. Draft Stallions and Saddle-Horses	19 00

Class.		
4.	Sweepstake Stallion	\$25 00
5.	" Pairs and single Horses	16 00
6.	Farmers' Trot and 3-Minute Race	75 00
7.	Mules	12 00
8.	Durham Cattle	90 00
9.	Crosses and Grades	28 00
10.	Oxen and Steers	54 00
11.	Broke Cattle	14 00
12.	Fat "	30 00
13.	Sweepstake Cattle	50 00
14.	Sheep—Fine Wool	29 00
15.	" Long "	33 00
16.	" South-Downs	29 00
17.	" Fat	4 00
18.	" Sweepstakes—Fine Wool	5 00
19.	" " Long "	5 00
20.	" " Pen of 10	5 00
21.	Hogs	34 00
22.	Poultry	23 00
23.	Field Crops	16 00
24.	Grain and Flour	17 00
25.	Butter, Cheese and Sugar	36 50
26.	Bread and Preserves	31 50
27.	Wines, Jellies, etc.	36 50
28.	Horticulture	53 00
29.	Agricultural Implements	22 00
30.	Domestic Manufactures	90 50
31.	Ornamental Work	6 00
32.	Fine Arts	8 50
33.	Mechanic Arts	19 00
34.	Musical Instruments .....	.....
35.	Cabinet Ware	5 00
36.	Unclassed Articles	1 00
Total		\$1,119 50

1,302 entries at the fair.

TUSCARAWAS COUNTY.

The annual fair of the Tuscarawas County Agricultural Society, for the year 1871, was held October 3d, 4th, 5th and 6th, on their grounds, near the town of Canal Dover, with great success and encouragement to the managers.

Last spring the grounds were enlarged by the addition of twelve acres more of land, which, with the old ground, makes an inclosure of about twenty-five acres. Part of this ground has been leased at \$12 per acre, to be paid annually.

Notwithstanding the great expense attending so much improvement, the Society have still a surplus on hand, and now contemplate the building of a house to be used for offices during the fair, and also sufficiently comfortable for a family to occupy, to take charge

of the grounds during the year, which always have been much mutilated by persons, with no other apparent object than to see how much mischief they could do.

The display in all the departments was better than we have ever had at any previous fair. Stock, especially, showed great advancement; quite a number of thoroughbred cattle, purchased from some of the finest herds in Ohio and Kentucky, were on exhibition. The Zoar Society added very materially to this class, and showed some very fine animals.

Horses were in great numbers. The improvement in blood is beginning to show itself—some very fine animals, representing the Gray Eagle, Hambletonian and Eclipse stock, several Canadian stock horses, with the Plow Boys, making a fine display.

The fruit and vegetable halls were well filled. Some very fine collections of grapes and apples, the former of which seems to suit the hilly parts of our county, and our German population are taking hold of it in earnest; already quite a quantity of wine has been shipped, and meets with a ready market.

The space allotted for the display of machinery, was better filled than ever before. In fact Tuscarawas county bids fair, ere many years, to hold an exhibition of its products that will be equaled by few and excelled by none of its neighboring counties.

The principal products for export are stock, wool, wheat, clover seed, timothy-seed, corn, salt, iron and coal.

The following crops are raised, and about their average yield for the year: Wheat, 18 bush.; corn, 75; rye, 15; oats, 35; buckwheat, 5; barley, 25; potatoes, 100; clover-seed, 2; and hay, 1½ tons per acre.

The following are the number of entries made in the different classes:

Class B.	Grain, &c.....	40
"	C. Horses and Mules.....	148
"	D. Cattle.....	51
"	E. Sheep.....	55
"	F. Swine.....	20
"	G. Poultry.....	27
"	H. Garden Vegetables.....	81
"	I. Fruits.....	51
"	J. Preserves, Jellies, &c.....	195
"	K. Farm Implements.....	68
"	L. Domestic Manufactures.....	48
"	M. Needle Work.....	98
"	N. Cabinet Ware.....	7
"	O. Manufactures of Wool and Iron.....	13
"	P. Fine Arts.....	33
"	Q. Miscellaneous.....	31
Total entries.....		966

Membership, 776.

UNION COUNTY.

The Union County Agricultural Society has been more successful during the last than any previous year. Improvements have been made on the fair ground by putting up fences and stalls for cattle and horses, about one hundred in number.

The number of members this year is 1093.

There seems to be a more general interest taken in the Society than heretofore; the

attendance at our last fair, was larger and the receipts more than ever before. Prospects of the Society are good as to its usefulness and progress.

The principal crops raised in the county are wheat, corn, rye, oats, barley, flax, potatoes and sorghum. Wheat crop good; corn, moderate crop; rye, small crop; oats, extra; barley, good; flax, moderate; potatoes, plentiful; sorghum, scarce.

The season has been dry. During fall there was a great scarcity of water; earlier in the season, there was rain sufficient to bring the crops forward.

The potato bug (Colorado) has been quite bad, but still there is sufficient potatoes to supply the home demand, or nearly so. Many fields of potatoes were saved by destroying the bug, by various means—mostly, however, by the use of Paris Green.

Apples were a failure in this county; buds killed by frost in spring.

We have built during the last year about 30 miles of free turnpike, making altogether nearly 100 miles of pike in the county, and fair prospect for much more during next year. A great amount of ditching is being done.

The resources of the county are being rapidly developed.

VAN WERT COUNTY.

The annual fair of the Van Wert County Agricultural Society was held, on the Society's grounds, on the 14th, 15th and 16th days of September, 1871.

The attendance was good. The number and variety of articles exhibited in most of the departments would compare favorably with former years.

The exhibition of horses, cattle and hogs, whilst not so great in number, comprised excellent specimens. That of sheep and mules was not so good, neither as to numbers or quality. The show of vegetables and grain was excellent, both as to quantity and quality; also that of domestic manufactures was good. That of farm implements and machines was small.

The principal agricultural products are wheat, corn, oats, rye, barley, clover-seed, timothy-seed, flax-seed and potatoes. The yield of wheat, corn, oats, flax-seed and potatoes was more than an average; rye, barley, clover-seed and timothy-seed about an average.

The fruit crop of the county was almost an entire failure, on account of frost and the ravages of worms.

The average of wheat per acre, 22 bushels; corn, 65 bushels; rye, 20 bushels; oats, 70 bushels; barley, 30 bushels; clover-seed, 5 bushels; timothy-seed, 10 bushels; and flax-seed, 10 bushels.

The Board has no report to make on field crops, and other improvements in agriculture, as no entries were made for this year, yet it is evident that an increasing interest is manifested in our county in the management of farms and in the cultivation of field crops. Our farmers appear to be waking up to their interests, and are ditching and underdraining their farms pretty thoroughly.

The Society numbers three hundred and fourteen members; has ten acres of land, fenced, a hall, well and other fixtures in pretty good repair, and the prospects of its progress and usefulness are good.

WARREN COUNTY.

The Society held their annual Fair on the 20th, 21st, and 22d days of September. The weather was favorable, and the display of articles for exhibition not surpassed by any county Fair in southern Ohio. Owing to the Industrial Exposition simultaneously in session at Cincinnati, the attendance was not as large as last year, which caused the falling off of the receipts compared with 1870.

The exhibition of stock of all kinds was never surpassed by a similar exhibition in this county. The show of cattle was large, embracing very fine herds of Short-horns and Devons, and numerous choice selections from other breeds. The exhibition of sheep and hogs was also very complete. The Board having offered a liberal premium for best lot of ten feeding hogs, the prospective feeders selected from their swine herds the ten choice, which added greatly to the interest and attraction of this class of live-stock.

The horse show is always a prominent feature in the Fairs of this county. We have here the best grades of horses in almost any class, from a sucking colt up to the draft horse, or the smooth-limbed mare, appropriately suited for the fast ring. Warren county may safely challenge any county in the State to produce better or finer horses. No very fast time, however, was made at the late Fair, one making 2.40, and a competitor 2.41. The entries in horses were large.

The show of agricultural implements and machinery was equal, probably, to any former Fair in the county. Our lack of manufacturing interests naturally makes a deficiency in this department. The display of fine arts was not superior to other years. This department was, however, an attractive feature. The domestic manufacture and ladies' work was a credit to the exhibition, and showed not only the skill and industry of the women of Warren, but also their willingness to add to the attraction and usefulness of our annual Fairs. In this department was to be seen the fancy needle and shell work, ornamental crochet, painting, drawing, and the numerous articles of domestic manufacture, butter, bread, cheese, preserved fruits, and jellies. A very fine display of miscellaneous wines and liquors was also on exhibition.

The vegetable and horticultural departments, under the supervision of the Warren County Horticultural Society, constituted a display not surpassed by the State Fair. The fruit was abundant and of the finest quality. The vegetable display was almost equal to the fruit. The present year has been favorable to the fruit-growers, and the supply of fruits of all kinds, especially apples, has been abundant and of the finest quality. Peaches, pears, plums, grapes, &c., have also yielded a bountiful crop this year. This is recognized as the bounteous fruit year, as its equal dates many years in the past.

Some very fine specimens of wheat of different varieties, oats, rye, and corn of almost innumerable variety, were on exhibition. The crop of almost all kinds of grain has been good in this county. The worst enemies to the wheat are the rust, fly, and weevil, the crop this season, however, having almost entirely escaped the ravages of these evils. The average yield of wheat is from 15 to 25 bushels per acre; corn, 60 to 75; barley, 50 to 60; oats, 40 to 50; rye is not extensively cultivated; flax yields well. The crop this year is superior in quality and quantity over last year. Warren county comprises the major portion of the rich farming land lying between the two Miamis, and is one of the leading agricultural counties in the State. The soil and climate are adapted to almost all kinds of grain and fruits usually found in this climate, which are extensively cultivated, especially peaches, which are raised in large quantities.

The Warren County Agricultural Board is composed of live, active members. Its labors

in the past have been of inestimable value to the farming and fruit-growing interests of the county, while stock-raisers have enjoyed the advantages of the annual exhibitions. The Society is in a thriving condition; in debt somewhat, but with a future prospect of liquidation and continued usefulness to the farming, fruit-growing, and stock-raising interests. The number of entries made at the late Fair was 1,063. Corn may be mentioned as the staple product of this county, which is mostly fed to stock, principally hogs; for big hogs Warren is not easily surpassed.

The Fair in 1871 was a success, but greater preparations are to be made for the Fair of 1872, which is to be held four days. Two new directors were elected to the Board on the last day of the Fair, and the officers re-elected at a subsequent meeting of the Board.

WASHINGTON COUNTY.

The twentieth annual Fair of the association was held on the grounds of the Society, in the city of Marietta, on the 20th, 21st, and 22d days of September. The officers of the association made use of all the means at their command to make the Fair a success, and the result gave very general satisfaction to all interested. The exhibition in all the departments was fully up to any former year. The show of horses and cattle exceeded any former Fair in the county. The exhibition of hogs and sheep was very good, and gave evidence on the part of farmers in this county to improve the stock of both hogs and sheep. The display of fruit was better than that at our Fair last year; the show of apples was very fine, and the best we have had for years. Many varieties of apples were presented by parties who never before exhibited fruit at our Fairs. The peach season being nearly over, but a very few were offered. One or two baskets of late peaches were very good.

The display of grapes was very good, Concords taking the lead of all others. The fruit crop of the county this year is much better than that of last year, but not up to an average crop.

Apples were damaged by the spring frosts, and the extreme dry and warm weather during the summer ripened the fruit earlier than usual, and the complaint is very general that apples are not keeping well this winter; russets, especially, are not keeping as in former years. The Rome Beauty is the most popular apple with our fruit growers, and is keeping better than any other. It has proved a very desirable and profitable apple for market.

The plum crop this year was better than for many years. Strawberries and other berries, not a half crop, except raspberries, which were fully up to an average crop. The absence of the curculio was noticed by all our fruit growers in the county. The ravages of this destructive insect were less than for many years.

One of the attractions of our Fair was the fine display of manufactured goods and fancy articles in the hall of our fair building. One noticeable feature was the falling off in the quantity of domestic goods manufactured by the wives and families of our farmers. Most of the goods on exhibition were from the factories.

The interest of our farmers in examining the agricultural implements on exhibition gives evidence of a growing disposition to make use of all good labor-saving machinery in the cultivation of farm crops. The receipts of our Fair were nearly three thousand dollars, and the attendance better than at any former Fair. The number of members is three hundred and eighteen.

The success attending our association this fall encourages the managers in the hope that the receipts of the Fair next year will enable them to relieve the association entirely from debt.

The principal crops of the county are fruit, wheat, corn, oats and potatoes. As compared with last year, all these crops have yielded a better return to the farmers this year than last, except wheat. The unusual, continued drouth which prevailed during the entire year past tended very materially to affect the crop in this county. A bug, supposed to have been the Colorado potato bug, made its appearance in various sections of our county, but the damage done by it was very slight. The destruction by insects has been less than our farmers have usually suffered. The hay crop was very light. The amount of clover seed saved by our farmers, although not large, is greater than any former crop.

WAYNE COUNTY.

The fair was held in Wooster, October 3d, 4th and 5th, 1871. The membership this year is 269. The fair was well, but not largely, attended, and a good display of articles were exhibited. The show of stock was larger than usual; especially was this the case in sheep. Our farmers are turning their attention to long wool sheep, and allowing the Merino stock to diminish. The success of our Society is considerably affected by the existence of several small societies in different parts of the county, the local interests in which of course affects the attendance at our fairs. The Society, however, is in a good condition, financially and otherwise. The premiums paid will amount to about fourteen hundred dollars.

WILLIAMS COUNTY.

The fifteenth annual fair of the Williams County Agricultural Society, held at Bryan, on the 19th, 20th, 21st and 22d of September, 1871, met with a most gratifying success. The weather was all that could be desired, and the attendance during the last three days unusually large. The display, particularly of cattle and swine, exceeded that of any former exhibition. The total number of entries were 1,468, of which 322 were of live stock.

WOOD COUNTY.

The annual fair of the Wood County Agricultural Society was held on the Society's ground, at Tontogany, October 4th, 5th and 6th, 1871. The exhibition was much better than its friends anticipated. The long season of dry weather, and the great scarcity of water, it was thought would prevent many from bringing out their stock. We were, however, agreeably disappointed, as the display of stock was larger than any previous year. J. W. Ross, J. J. Parks, and Pennywell & Brown exhibited some very fine stock. Horses, sheep and swine were largely in excess of any former fair. There was also a large display of farming implements on the grounds. On account of the long-continued

dry weather, there was not as large a display of vegetables as we usually have; still the exhibition was creditable to the growers. Fruit, in some parts of the county, was a failure, caused by cold rain and wind at the time the trees were in bloom; and many orchards were injured by worms eating the foliage, leaving them almost as naked as they are in winter. Many of the orchards on the river and ridges produced a fair crop of very handsome fruit. The tables were very well filled, and the show quite respectable, of apples, pears, peaches, quinces and grapes. The exhibition of canned and preserved fruits was a decided success. One lady had on exhibition twenty varieties, comprising cultivated and wild fruit.

Floral hall was not quite up to former years. Jack Frost made a visit to the flower beds a few days before the fair and spoiled most of them; otherwise the hall was very attractive. Our entries were over 1,000—some difference from twenty years ago. Our first fair was held in 1851. Allow me to give you a list of the entries made at that fair, viz: Cattle, horses, sheep, swine and poultry, 45; farm implements, 5; grain, 7; butter, cheese and honey, 9; ornamental needle work, 20; domestic manufactured articles, 11; flowers and bouquets, 5; harness, 2; fruit, 7; vegetables, and mostly pumpkins, 8; miscellaneous articles, 10; total, 129.

WYANDOT COUNTY.

The Wyandot County Agricultural Society's Fair for 1871 was held on the Society's grounds, at Upper Sandusky, on the 11th, 12th, 13th and 14th of October, 1871. The display of stock of all kinds was as good, if not better, than at any previous fair. The display of grain and potatoes was excellent. The fruit crop this season has been limited; hence there was not a large exhibition of fruit. There was a large show of farming and agricultural implements of all kinds. There were no entries made for competition on field crops.

Financially, our fair was a success. We have paid all unpaid premiums of 1870 and 1868, and all of last year's indebtedness, this year's premiums and expenses, and have still a small balance in the treasury. There seems to be a lively interest springing up amongst the people in regard to the Society, and we have no doubt but another year will witness one of the best fairs ever held in the county.

Number of members in the Society, 376.

ESSAYS, ETC.

THE BEST PRACTICAL MEANS OF PRESERVING AND RESTORING THE FORESTS OF OHIO.

BY DAN. MILLIKIN, HAMILTON, OHIO.

NEGLECT OF FORESTRY IN OHIO.

For the first time in its history, the Ohio State Board of Agriculture has turned its attention to the forests of the State. We have had premiums for the best memoirs on drainage, the application of fertilizers, and on many other agricultural topics, and quite recently the printed reports of this board have contained prize essays on the agricultural history and topography of seven different counties; but, until now, no effort has been made to draw out information pertaining to our forests. This inaction on the part of the board is quite in harmony with the small regard, or indeed the contempt, with which Ohio farmers have hitherto looked on the timber; and, until quite recently, public opinion would have forbidden any devotion of money to the diffusion of knowledge of the forester's art. Our ancestors came from a wooded country, and found Ohio a woody wilderness. They had learned to regard the forest as the lurking-place of wild creatures, biped and quadruped, dangerous to the settler and to his domestic animals. In its shades they believed deadly miasms were engendered, which, creeping over the land, brought lassitude, disease and death. The settler's children sometimes diverged from the rude paths of the wilderness, became bewildered, lost the sense of direction, and then went hopelessly on, wandering in endless spirals and circles until strength was gone. If ultimately found, these lost ones retained through life a certain horror of the solemn forest; if not found, they left a deeper horror in the breast of each mourning friend. Thus the pioneer came to hate the woods and to regard it as a shelter to his enemies, an insidious foe to his health, and a screen against the sun which gave vigor to his crops and cheerfulness to his soul. Every field was won by axe and fire. As he

made war on the woods, so he prospered. To continue this war, when the occasion of it is long past, is, unfortunately, an instinct which we are too much inclined to follow blindly. Even the boys heedlessly fell thrifty and valuable saplings, or, without shame, put a blaze on a magnificent oak.

But he is willfully blind who does not perceive that we have now reached a time when another policy will pay better. With the exception of a very few counties in this State, there is not enough timber to supply local demands for lumber and fuel at moderate prices, and even the counties excepted from this statement have been stripped of certain choice sorts of wood.

Our board, then, not only acts wisely in encouraging the study of forestry, but acts in accordance with the desire of intelligent farmers. To preserve and restore our forests is the ambition of many.

Before discussing the best means of preserving and restoring our treasure, a few remarks on the manifold importance of it may not be misplaced.

WOOD IS INDISPENSABLE.

No use for wood is more extensive than its use for building. I am aware that the sumptuous mansions of the rich will everywhere be constructed of stone, brick and plaster, and that, after the severe lessons learned by American cities in 1835, 1866 and 1871, no wooden house ought to be erected in any city. Yet it will be a sorry day for the poor when wood becomes too high priced to be devoted to other than luxurious uses, and the humbler dwellings shall be of stone only. The lack of the dry floors and abundant partitions which we find in almost every house in Ohio, has, of itself, done more to ruin the English and Irish laborer than would be believed, even if this were the place for me to write it. The sorry record of the diseases and the more loathsome sins which are fostered, if not engendered, in British farm laborers' cottages, is familiar to most readers.

Wood will always be needed for the interior ornamenting of houses. For this purpose it may be high priced in the future, and it must be of choice quality. Even for painted work we must have clear stuff, susceptible of a smooth finish under the plane and not liable to shrink or warp. Woods valued for striking color, or for the beauty of their grain, will always command a high price. Cabinet-makers demand a quantity of these same woods.

Handles of tools and portions of machines are made of wood, and it is not easy to see how any other material can be substituted. What is particularly important to us, is the fact, that *American* wood is preferred before any other. American white ash has a reputation over the world

and it is recorded, that implements containing our wood will, in the European markets, outsell European tools of identical patterns (Fuller's Forest Tree Culturist, p. 95; and G. P. Marsh's Man and Nature, 308). Nature was in a generous mood when she founded our forests; and if we will, we can produce wood to fill every requirement which artisans may devise.

The cooper's art will probably decline with the scarcity of wood, and vessels of iron, either tinned or galvanized, will be generally used in place of wooden barrels, buckets and tubs. It is doubtful, however, if any containing vessels can be substituted for oak casks in the manufacture of wine. France, producing $1\frac{1}{2}$ billions of gallons of wine annually, has found no substitute for oak casks, and her own forests having been thoughtlessly ruined, 63,000,000 oak staves were imported as long ago as 1866. (New York Evening Post, Weekly, Nov. 1, 1871.)

Wood has also an office to perform as fencing. When the days of worm fences and plenty of them, shall have departed, and after the advent of neat hedges and walls, there will still be a considerable amount of fencing which must be done with wood. Portable hurdles, the usefulness of which in large fields we have yet to learn, will consist of wood. And substantial wooden fences will be needed for lanes and yards where, on account of incessant tramping, no hedge could flourish, and where stone walls might be too costly.

Of the use of wood for burning it is not necessary for me to speak, save with regret that so much, fit for nobler purposes, is burned when an inferior quality would make quite as good fuel. Judging from what has happened in Europe, we may be sure that no good, clear wood will be burned here when it has been a little more appreciated by scarcity, and when cheaper and more universal transportation has cheapened coal. Charcoal, however, is a substance so indispensable in the arts that it will doubtless be consumed in increasing quantities to the end of time, and in this metamorphosed form much wood will be burned.

SUBSTITUTION OF OTHER MATERIAL FOR WOOD.

While in the manufacture of many articles wood can be abandoned, there are ten thousand other articles which, for all that we can see, must ever be made of wood. I can conceive of no cheaper substitute for the wooden posts and piles which enter into the construction of wharves, bridges and piers. Lucifer matches are trifling things, but so long as they are made in such enormous numbers as at present, they cause a terrible drain on the forests for clear white pine lumber. Within the observation of Hon. G. P. Marsh, tracts of hundreds, and even thousands of acres have been

cut away to supply lumber for match factories. The same acute observer reports that, in the first two years of our civil war, 28,000 walnut trees were felled to supply a single European manufactory with gun-stocks for the American market. We dare not attempt to estimate the cords of choicest walnut lumber required for the armament of the American hosts in the subsequent years of our war, nor of the vast legions which Prussia has since then sent forth to fight Austria and France. Our hopes of an extended substitution of iron, steel, stone, brick and coal for wood, in many sorts of manufactured stuff, are not small. No cultivated wood can be so cheap as the superabundant virgin wood of the past; wood is growing more costly every day, while its substitutes will grow cheaper as rapidly as more skill and better processes and machines are applied to their preparation and use. We have iron ships and river vessels. We have iron bridges, so cheap, light and durable, that they will soon supersede all others. Numerous iron harvesting machines have been introduced, some of which actually contain no wood save in the tongue. The old wooden measures are about to be laid aside for iron; and wooden plows, wooden harrow-teeth and wooden husking-pins, are abandoned since long ago.

Nevertheless, and in spite of this substitution, the consumption of wood is enormous, is increasing, and is, in a sense, universal. If the reader will make a survey of the offices of wood, such as I am forbidden to extend further here, he will surely agree with the wise old Palissy, who, centuries ago, wrote: "I have divers times thought to set down in writing the arts which shall perish when there shall be no more wood; but when I had written down a great number, I did perceive that there could be no end of my writing, and having diligently considered, I found that there was not any which could be followed without wood. * * * The very chamber wenches, if they do but think, may see that without wood, it is not possible to exercise any manner of human art or cunning." (Quoted in *Man and Nature*, 297.)

INFLUENCE OF FORESTS ON LOCAL CLIMATE.

Besides being a source of wood, the forests are of immense importance as they stand. They cover about one-tenth part of the earth's surface, and in our ignorance we admit that they have but slight influence on the general climate. I think, however, that it is established that forests powerfully affect local climates. Trees exert an influence which induces the precipitation of rain. The soil of the forest is also a reservoir of moisture. In hot and dry weather, this moisture is slowly yielded to the atmosphere. In the very act of yielding its water to evaporation in hot

weather, the forest soil exerts a cooling influence. At the same time the trees themselves are also evaporating vast amounts of water. Professor R. W. McFarland, of Miami University, operating with four fine thermometers, finds that all readings obtained under a tree, are too low. In answer to a note of inquiry, he has kindly sent me a plat of his dooryard, and given a full detail of facts which establish a conviction, that some influence proceeding from his apple tree lowers the temperature, from a half of a degree to as much as a whole degree below the temperature in the shade of buildings, &c. We should remember at the same time, that trees are constantly absorbing water from the soil; and that this water, even before evaporation, cools the air into which it is elevated. If then, trees are in summer constantly moistening and cooling the air, it seems certain that they must determine the precipitation of rain from any passing current of air near dew point. The general drift of testimony is to the effect that showers do haunt wooded regions. On the upper Nile, since trees have been felled in certain localities, rains have become rare, and it is generally believed that rains in lower Egypt and neighboring coasts have increased since the great plantations of Mehemet Ali and Ibrahim Pacha. In France certain localities have been cleared within recent times, and those same localities have become barren wastes destitute of all summer showers. Quite recently many square miles have been planted in Scotland, and with an increase of summer rains, which is apparent to all residents. Similar effects have been observed in our own country. In many places we find that what once were important mill streams, furnish a mere thread of water, save when filled with sudden freshets. In our own State, certain streams emptying into the lake, which were once declared navigable, will not now float a canoe. In the United States we have also had some opportunity of observing the effects following the settling of regions not originally timbered. The Great Salt Lake of Utah has been gradually filling since the planting of orchards and groves in the surrounding country; and at Denver we read that the bed of a stream which, at and before the founding of the city was dry, now has a perennial thread of water, and requires a bridge. (Report of Dep. of Agriculture, 1870, p. 227.)

These beneficent, cooling and moistening influences are fortunately discontinued or reversed in the winter. During the summer, the spongy and non-conducting soil of the forest has become somewhat warmed, and through the winter it slowly yields that warmth to the air. Experiment indicates that through the winter a tree retains a temperature above that of any dead body of the same size; and a large number of trees would, doubtless, produce a considerable local augmentation of temperature. In winter, too, evaporation from the moist forest soil has almost ceased, for

the cold, damp air of winter is always nearer to its dew point, and is, therefore, less thirsty than the air of summer. In winter, also, leaves are either dead or dormant, and their evaporation has ceased or abated.

The forest also powerfully arrests winds. A gentle breeze may breathe through the woods, but the boles and branches and little twigs slit the hurricane, and the fierce, biting winter winds into little cross currents of air, which spend their force upon each other and dance away in harmless, interfering eddies. The proof of this is in the majestic roar proceeding from the woods when stirred by the wind.

We say, then, that the forest is the great conservator of each of the valuable elements of climate. Whatever transient excess of heat or cold, or of wet or drouth, is inflicted upon us, the forest is able to absorb or remedy.

And indeed the forest is in all nature a conservative element, and the most perfect type of stability. It is changeable in its parts and has its phases, as have all enduring things; but, as a whole, it exists unchanged so long as man withholds his hand.

Since the amount of water precipitated upon the land will depend upon the amount evaporated from the great oceans (the expanse of forest being so contemptible as compared with the whole surface of the earth), there will be many philosophers to sneer at any attempt to modify climate by the addition of artificial timber to the native woods of the earth. Already some have maintained that no difference has been made in the mean annual rainfall or temperature in France or Spain since the extensive clearings there in modern times; and Prof. Henry has asserted that the rainfall in the United States has not diminished since the settlement of the country. To which Ohio farmers will answer, that they do not expect to change the general climate of the world, nor of the State, any more than they expect to live everywhere at once; but that they do mean to live each of them somewhere, and that they hope in that spot to mitigate summer's heat and winter's cold; to check swift winds, and to induce more frequent summer showers. As for mean annual averages, they might be a great deal larger or smaller and we scarcely know it; but sudden alternations and extremes of climate, we, as well as our animals and plants, experience too often, and feel to keenly.

PROPORTION OF TIMBER LAND IN OHIO AND OTHER COUNTRIES.

In Great Britain, where there are only a few hundred acres of native woods, and this suspected of being partially artificial, not more than 1-28th part of the surface is covered by groves. Canada and Norway supply nearly all the vast amount of lumber used in these islands. Spain and Portugal have but 1-20th of their area covered by woods, and not having the cli-

mate nor the importing facilities of England, these countries have suffered beyond all others in Europe for lack of wood and rains in summer. In the rest of Europe the area of forest is near one-fifth of the whole; and the verdict of foresters is, that at least one-third of Europe ought to be in timber. In Ohio, the census of 1870 reports 6,883,575 acres of wood-land and 359,712 of other unimproved land. The same census reports 14,469,133 acres of improved land, fenced and devoted to tillage. Taking these and other estimates, it appears that nearly one-half of the area of Ohio is occupied by timber. We have at once too much and too little.

OHIO TIMBER IS MISPLACED.

By this I mean that we have too many acres and too few trees. In some counties we have vast tracts of virgin woods scarcely broken by farms, and these forests must be cleared as the first step in populating and improving the districts. On the other hand, we find in the older counties patches of land which have never been cleared, but which have less than one-fourth of the timber they should carry, and this is often of inferior species and in a dying condition. In these regions, the farms, it is acknowledged, have no forest on them, but only what is known in the vernacular as "woods-pasture."

It sometimes has happened that farms, when opened in the wilderness, were cleared on their most hilly parts, while the timber was spared on land better fitted for the plow. It is also true that there are occasional farms heavily timbered.

On account of these facts, there is need of a comprehensive redistribution of woods over the State, and of a minute redistribution over most farms, whereby the best tillable land should be cleared, and slopes and water-courses planted with real forest. An essential part of this redistribution, and the only part which now concerns us, is the planting of new forests on appropriate sites; and here arises the need of some knowledge of forestry. For removing the superfluous or misplaced woods, no great art will be needed. They will naturally fall in obedience to the American watchfulness of "the main chance," and that other powerful national instinct, the propensity to hack and hew and whittle.

NEW AND ENORMOUS CONSUMPTION OF WOOD BY OHIO RAILROADS.

It would be folly to attempt to estimate the amount of lumber which will be required in this State within the next fifty years, but we know that amount will be enormous. Twenty years ago we had but 250 miles of railroad in the State (Report of Commissioner of Railroads, 1868, p. 283), the construction and working of which required but an insignificant amount of wood. Now we have considerably more than 6,000 miles of railroad, a

sudden growth, and but a fraction of what is to come. By a law now in force, these roads must be inclosed by more than 10,000 miles of fencing, and how perishable these fences are, all farmers know. These roads have more than 10,000,000 ties, which, lying exposed to air and dampness, decay in six or seven years.* The aggregate length of wooden railroad bridges in Ohio is nearly 16 miles, and of trestles, more than 10 miles! These are perishable structures, and must be frequently replaced; the average age of the 770 wooden bridges in Ohio is only $5\frac{1}{2}$ years, and of the trestles, 7 years. Moreover, locomotives burn an immense amount of wood; and, although coal is burned on railroads in a rapidly increasing ratio, yet the consumption of wood continues and increases. Ohio locomotives burned, in 1870, eighteen times as much coal as in 1858; but in the same interval, the consumption of wood rose from 209,416 cords to 700,000 cords.

Glancing thus at the present consumption of forest products by railroads, and remembering that our railroad system is of only twenty years' growth, and that Ohio, rich in all agricultural and mineral wealth, and lying as she does in the direct pathway from the east to the west, is destined to be always a railroad State, we can begin to conceive the demands which this new invention will make upon the woods. And seeing the immense need of wood to support this one new industry, we can prepare ourselves to estimate, in a rude way, the demands of many other older industries.

YOUNG CULTIVATED TIMBER IS OF THE BEST QUALITY AND SHAPE.

It is a fact peculiarly encouraging to whomsoever would turn forester, that cultivated wood is, for most purposes, superior to the native timber. The toughness of oak, ash, hickory, and other similar woods, is exactly in proportion to the rapidity of their growth. No accomplished axeman would accept timber from an old tree if he wished to make a handle for his own axe; he would rather seek a young hickory which, in some open spot, had been encouraged into rapid growth. Such an one he would cut and prize the more if it proved to be unusually coarse in the grain. Every ring of annual growth is, so to speak, a blemish in a stick of timber, and indicates a probable line of fracture. We can grow artificial wood faster than the saplings of the forest, and we can, therefore, produce wood more homogenous and more strong.

Young cultivated timber, beside being of the best quality, is of the best

* Calvin Chamberlin says the duration of ties is 5 years.—Lecture before Me. Board of Ag., 1863. Prepared ties last 8 years in the Presidency of Madras and Great Britain.—N. Y. Weekly Evening Post, Nov. 8, 1871, and Jas. Brown's *The Forester*, § 35.

shape for making articles with a circular section, such as hubs, pumps, turned columns, hitching-posts and the like. For the lathe, timber can be selected of just the right diameter for any particular purpose, so that little more than the bark need be turned off. Young cultivated timber is also more economical in the manufacture of handles, felloes, shafts, spokes and other articles, where great strength or elasticity are required; because in this sort of manufacture only sap-wood ought to be used, and young, thrifty trees will contain far the larger proportion of such.

I am confirmed in my conviction that all good artificial timber will find an eager market at an early age by the fact that the country is already stripped of young trees which have been grown rapidly through accident. I am acquainted with a region of this State where transportation is so difficult that cord wood is worth just what it costs to cut it; yet even in this district the woods are thoroughly culled of all young hickory and ash trees, which have been sought by agents and procured by purchase or theft, have eventually passed into the hands of carriage makers and other manufacturers. Near the present town of Houston, 16 miles north from Piqua, Gen. Wayne made an encampment at some time between 1792 and 1795. To avoid surprise by Indians, he caused a space of 10 acres to be cleared. In 1860 the buggy manufacturers offered 9 cents per foot, lineal measurement, for hickory, ash and elm logs on this tract, no log to be more than 10 inches nor less than 6 inches in diameter. The aggregate length of these logs was no less than 25,000 feet.

DEMAND FOR WOOD FOR THE TELEGRAPH SYSTEM.

The telegraph system, like the railroad system, is already enormous, but is in its infancy. The three great telegraph companies which operate lines in Ohio have 4,500 miles of poles within the State, and 11,500 miles of wire; in the United States these companies maintain 57,548 miles of poles and 116,561 miles of wire. Besides this, the Marietta & Cincinnati Railroad has 115 miles of poles and 250 miles of wire.

Alongside certain roads over the Alps we read that telegraph wires are sustained on low granite supports, but I am not aware that an attempt has been made elsewhere to dispense with posts, and we may, therefore, anticipate a market for every stick that we can grow of suitable dimensions. Outside of cities, and away from road crossings, telegraph poles are 25 to 28 feet long, and have a diameter at one end of 10 to 12 inches, and about 5 inches at the other. At this time the so-called white cedar poles, of these dimensions, are worth 90 cents each in Chicago. Such a price for this timber, which has undergone no manufacturing process, which is of very doubtful durability, and which has been transported but

a short distance, and that by water, may give some basis for an estimate of what prices will be 20 years hence, when we shall have, perhaps, two or three times as many miles of telegraph as now, and when the extensive forests of Michigan, Wisconsin and Minnesota are gone. A portion of the poles now used are carried a great distance, and, with the freight, they must cost enormously. Even now, at points distant from the sources of native wood, the companies would doubtless pay handsomely for good, durable poles.

Mr. George H. Thurston, President of the Pacific and Atlantic Telegraph Company of the United States, has favored me with a letter giving many facts relative to telegraph poles. He commends locust and red cedar posts, and never expects to see the decay of such as are used on the line of which he is an officer. Oak poles, which are somewhat used in Pennsylvania and Maryland, decay in 6 to 8 years. Chestnut lasts 12 to 15 years. The white cedar of Michigan (which, by the way, is *Arbor Vitæ*, and quite a different tree from the white cedar of the Eastern States) he regards as certainly not so durable as red cedar. And Tamarack (*American Larch*) has such ardent friends and enemies that Mr. Thurston withholds his opinion. I give the above estimate of the comparative value of different woods, because it comes from an officer of a company which owns about 150,000 poles, and must, therefore, be a valuable guide to planters.

HIGH PRICES FOR WOOD IN THE FUTURE.

From what has been said of the probable demand for all sorts of wood in the future, I am very confident that high prices will prevail. No one ought to hesitate about planting choice sorts of timber, even on land worth \$100 an acre. December 1st, 1871, good hoop poles for barrels were worth \$20 and \$30 per 1,000 in Cincinnati. Andrew S. Fuller, author of the *Forest Tree Culturist*, informs us that 10,000 such poles could be grown on an acre of ground in from 5 to 8 years. If half of these were spared we should have \$125, and probably more, as the gross receipts of the first crop. Supposing that the 5,000 poles not cut at first were cultivated for three years, they would be fit for first class hogshead hoops, and would be worth \$40 to \$75 per 1,000 in Cincinnati to-day, or, say \$275 for the second crop. Farmers do not need to be told that this will pay. All the cutting and most of the cultivation of such a plantation could be done between the fall and early spring, when ordinary farm work is not pressing. A hickory plantation would last forever, if cut only in the winter; for the sprouts would always grow straighter and faster than the original trunk. And, if the planter see fit, a portion of the plants might be permitted to grow up into trees, and the remainder be destroyed by summer

cutting. The hickory tree is valuable at any stage of growth, and, as fuel, it has been rated the highest by experimenters on both sides of the ocean.

Nursery stakes and stakes for blackberry and raspberry plants are worth from 2 to 6 cents in various localities. At the lowest rates stakes can be profitably grown, and in even less time than hoop poles. The Louisiana cypress has been recommended for this purpose, and would last twice as long as oak. It would, doubtless, be hardy all over Ohio.

EACH FARM SHOULD GROW ITS OWN LUMBER.

I do not wish to dwell on the certainty of profits from large plantations, because, with our present experience, all estimates would consist, more or less, of speculation. I would particularly urge the economy of the cultivation on the farm of the timber needed for the farm. If nothing else is done, every farm ought to have at least an acre of black locust trees. No wood is at once so hard, heavy, durable, strong and easy to grow. It is able to yield a fine return, even without cultivation. I am familiar with a locust grove of considerable extent on a great hill too steep for the plow. Ten years ago a splendid growth was cut on this hill, and it is now ready for the axe again. At least 100 fencing posts can be cut there annually for many years to come. On this hill, which, if left naked, would soon become seamed with unsightly gullies, the pasturage of June grass is excellent; and I cannot doubt that this hilly plantation might be made more profitable than the fertile corn bottoms lying near. Dr. John A. Warder has recently made a sale of locust timber to the city of Cincinnati, at the rate of \$1,000 per acre, and this was, as he informs me, a spontaneous and uncultivated growth, which, probably, did not occupy one-half of the ground which it possessed.

OHIO CANNOT LONG BRING LUMBER FROM OTHER STATES.

Planters must expect to encounter a certain lazy spirit of optimism which is abroad in the land. This will everywhere hinder the forester's art. It will be asserted that field crops have supported us so far, and will suffice for the future, without any cultivation of trees, and that, when our forests are gone, we can bring our lumber from elsewhere. If I can make it appear that we cannot cheaply procure lumber from any point, after the lapse of 15 to 20 years, I shall do much to encourage the production of wood at home.

Ohio stands on the edge of a system of prairies, which, commencing in Indiana, stretches westward to the Rocky Mountains, a thousand miles away. Southward, this region enters Texas, and stretches thence north-

ward more than a thousand miles, and may be traced into Minnesota. Take a string representing a length of 500 miles, place one end of it on the map in the center of Iowa, and then swing the other end round in a circle. Thus one may rudely mark out the great treeless region which has an area of nearly 1,000,000 square miles. It is folly to look westward for our supply of wood. Eastward, along the foot-hills of the Alleghanies, there was once a magnificent growth of coniferous timber; but the pines of Virginia, Pennsylvania and New York have fallen, have fallen! Transportation down the Ohio river and its tributaries was so easy that cutting began in that region at an early date, and is finished. Wisconsin and Michigan are now supplying us with pine lumber, and, so cheap is water carriage, that much of the timber of British America is not beyond our reach. Yet we ought not to count on a supply from the lakes for more than 15 years at the most, and perhaps 10 years at the least.

In 1835-40, before which time no steady and abundant tide of emigration flowed into Michigan and Wisconsin, there were about 10,000,000 acres of choice timber in those States. Lumbering has, for a few years, been prosecuted with astonishing vigor, so that now only 4,000,000 acres of timber remain. Not less than 1,750,000,000 feet of lumber is annually sawed in this region, and this, by a received mode of calculation, involved the clearing of 200,000 acres. [Rev. Geo. Pinney, of Sturgeon Bay, in Report of Department of Agriculture for 1870, pp. 227-8.] Then, at the present rate, this timber will be consumed in 20 years! We should remember, however, that the present rate cannot remain, but that it must increase in a swift ratio. We have every reason to believe that our country will remain in peace for many years, and will invite immigration; and there is every reason to believe that the peace of Europe will be broken by social revolutions and international wars, so that emigration from thence will be even more brisk than now. If the population of the Mississippi valley increases as rapidly as statisticians expect, the drain on the Wisconsin and Michigan pine forests will exhaust the supply within 10 years.

We must bear in mind also that the natural channels of transportation will lead this lumber out into the Mississippi and to the very center of the great treeless region rather than to Ohio; and were it not so, the prairie States can and will pay better prices than we, their present emergencies being greater.

We must compete also with England for so much of this lumber as can be readily brought to the lakes. The British islands have been large purchasers at Quebec for a century. Recently the Scandinavian governments have enacted laws which will tend to check the ruthless destruction of their forests, and the Central Administration of Norway has declared it "necessary to stop the cutting of trees." Exports of lumber from

Norway have doubled within ten years, and it is plain that this legislation will force England to buy almost exclusively in the Canadian market. When we consider the lack of home-grown wood in England, and the length of her purse, we may well cease to regard our claim to the pine woods of Michigan and Wisconsin as a very strong one.

Of Minnesota timber I have not yet spoken; and so extravagant are the statements of Minnesotians as to the extent of their forests, that it is impossible to learn the truth. In one breath they tell us that they mean to supply the Mississippi Valley with timber for centuries; that they have the water-power and the enterprise to saw and manufacture the timber of the world in a few years; and that very shortly they mean to have the whole State cleared, plowed, and seeded down to spring wheat. We know, however, that the grand forests of this State are rapidly melting away, and that nearly or quite 1,560,000,000 feet of lumber were sawed there in 1869. But a fraction of this lumber goes to the lakes and only a fraction of this reaches or can ever reach Ohio. Minnesota is partially a prairie, and her timber cannot last long; and when the Northern Pacific Railroad and branches shall make the timber more accessible, we may expect her forests to vanish and be absorbed into Iowa, Illinois, and States farther down the river.

GENERAL MODE OF CULTIVATION—MANUAL LABOR TO BE AVOIDED.

And now, passing from these general views of our topic which have too long detained us, I will attempt to propose a mode of culture suitable for artificial forests in Ohio. *Imprimis*: We must not slavishly follow European modes, and indeed we cannot, our land being comparatively cheap and our wages comparatively high.

In Europe turf is not generally broken when a plantation is to be established upon it, and land covered with undergrowth is actually trenched, (but only one foot deep,) to get rid of sprouts and stumps. Young trees are planted in turf by a method which seems to be extraordinarily clumsy and awkward. Two gashes are made with a spade, crossing each other, and then the spade is again stuck into the sod at the end of one of these cuts. On prying with the spade the sod yawns, the little tree is inserted into the slit, the spade is withdrawn, and after a sufficient amount of tramping "to exclude drouth," the tree is regarded as planted. Larger trees are planted in holes dug in the turf.

In Ohio we can and must do better than this. Turning the soil with a spade may not so much as be named among us. Where the plow can be used, land devoted to trees should be plowed before planting, and be plowed several times if need be. Some seedlings which have been grown

in sod can be successfully transplanted in a large piece of turf, and will flourish when transplanted into sod again; but generally young trees planted in the grass languish for years, as I know by my own experience, and as I shall presently show from records of Scotch plantations.

Another European practice which we cannot follow is the frequent transplanting of young trees from the seed-bed to nursery rows, and then annually into other nursery rows, in order that they may at last endure the shock of transfer to their permanent places. One or two years old seedlings can be planted in good mellow soil as rapidly as cabbage-plants. The ground should be freshly stirred. A boy should carry the plants and drop them where they are wanted, and each one should pass from a bucket of water into the soil in three minutes' time. A man, following the boy, can set the plants with a dibble and press the ground firmly about them, and plant not less than 5,000 per day. Mr. Henderson, the eminent and successful gardener and florist, says that he has thus planted 90,000 celery plants in one day, working ten men and ten boys; and we can work faster, our plants being more hardy and our planting season more propitious for bustling, active labor. [Gardening for Profit, p. 43.]

Where it is possible we should avoid even this transplanting, as it is a severe check to the seedlings. Large nuts, and all other seeds which produce strong seedlings, should be planted where they are wanted to remain, and being in exact rows, they should have the benefit of clean cultivation by horse-power. The language of James Brown, LL.D., a famous Scotch forester, is at once pathetic and amusing when he writes, after detailing experiments which prove that to transplant an oak is almost to kill it, "*Were it practicable* to have all our forest ground plowed and cleaned in the same manner as in agricultural operations, I would unhesitatingly say that all forest trees ought to be raised from seed at once sown in the ground they are intended to occupy." And this from the man who declares that he has sometimes expended as much as seven pounds sterling per acre for manual labor wasted in grubbing, when, as we know, one-half the money would have put the soil in good order for any crop if spent for plowing. We can learn much from the canny Scot whom I have quoted above, and mean to quote again, for his great treatise on forestry is full of practical wisdom and common sense; but we must take him in a Pickwickian sense when he tells us that land destined for a forest needs no preparation except drainage and the opening of large holes for trees, and that soil recently spaded is too light and dry for trees! (The Forester, §§ 1777, 432, 1567.) Long ago we grew too wise for this sort of work. A writer on pear culture has described one better and cheaper method, when he advises to dig but one hole for a whole orchard, and dig that with a plow. (Field's Pear Culturist, p. 17.)

The rate of growth which Dr. Brown has found for trees in a favorable soil and site, when planted according to Scotch notions, is as follows. Diameters are in inches, at 8 feet from the earth :

Age—Years.	Oak.	Larch.	Norway Fir.	Chestnut.
10 .....	.75	2.	2.	2.50
15 .....	.....	5.	5.	4.50
20	4.50	9.	7.	7.
25 .....	.....	11.	10.	8.50
30	9.50	13.50	13.50	10.
35 .....	.....	17.	15	11.50
40	16.	21.	17.50	13.50
45 .....	.....	23.50	18.75	14.50
50	20.50	24.50	20.	15.
55 .....	.....	25.50	21.50	16.50
60	25.50	27.	22.75	17.50
65 .....	.....	28.	23.50	19.
70	29.	29.	24.50	20.
75 .....	.....	30.	25.50	21.
80	31.50	30.50	26.25	22.
85 .....	.....	.....	27.	22.50
90	32.75	.....	27.75	.....
95 .....	.....	.....	.....	.....
100	33.50	.....	.....	.....
120	34.75	.....	.....	.....

From these figures it appears that young trees are much injured by transplanting in this rude way, the oaks scarcely growing at all for some years. The use of the plow and cultivator to loosen the earth and keep it loose, is not only conformable to common sense and to science, but has been experimentally recommended to us by American experience in orchard culture and silviculture.

I collect the following tables of dimensions, because they are valuable for all planters, and have a special interest as showing the size of American trees:

AGE: 12 YEARS.

SPECIES.	Report of Committee of Ill. Hort. Soc. in 1864.		Observed by D. C. Scofield at Elgin, Ill. Bryant's "Forest Trees," p. 42.	
	Diameter near the earth, in inches.	Height in feet.	Diameter near the earth, in inches.	Height in feet.
Ash, white	10	20	3 to 5	16
" blue	10	20	.....	..
Beach, European .....	..	..	2 to 4	10
Birch, European .....	..	..	4 to 6	14
" American, vars.	10	25	.....	..
Chestnut	10	20	3 to 4	16
Elm, white	10	20	3 to 4	16
" Scotch .....	..	..	3 to 4	16
Hickory, vars.	8	25	.....	..
Maple, sugar .....	..	..	2 to 4	12
" white	12	30	4 to 6	25
" ash-leaved	12	20	.....	..
Poplar, Lombardy	10	40	.....	..
Walnut, black .....	..	..	2 to 4	14
Willow, white	18	40	.....	..
" yellow	18	35	.....	..
Fir, Balsam .....	..	..	4 to 6	16
" Norway Spruce .....	..	..	5 to 8	20
Larch, American	8	25	4 to 6	25
" European .....	..	..	8 to 12	30
Pine, Austrian .....	..	..	5 to 7	16
" Scotch .....	..	..	4 to 8	20
" white .....	..	..	6 to 10	35

We find a fuller report on the growth of trees from a committee of the Illinois Horticultural Society. This committee's tabular statement gives the figures for no less than 77 common trees and shrubs, from which I select the following: [Report of 1868, pp. 254-5.]

SPECIES.		Girth in inches at			Height in feet at		
Common name.	Proper name.	5 yrs.	10 yrs.	15 yrs.	5 yrs.	10 yrs.	15 yrs.
Ash, white	Fraxinus Americana	6	13	22	9	15	32
" blue	" quadrangulata	6	14	22	9	15	29
" red	" pubescens	6	14	23	9	14	29
" black	" sambucifolia	5	11	15	7	12	19
Birch, yellow	Betula excelsa	5	12	18	9	15	29
" red	" nigra	4	13	22	8	16	30
" paper	" papyracea	5	12	18	9	16	30
Catalpa	Catalpa vignonoides	6	15	23	10	15	25
Cherry, black	Cerasus serotina	6	12	26	9	16	30
Coffee-nut	Gymnocladus Canadensis	3	5	10	8	12	17
Cottonwood	Populus monilifera	9	22	46	10	20	50
"	" angulata	8	21	47	10	18	48
Elm, American	Ulmus Americana	4	13	22	8	20	36
" cork	" racemosa	4	13	21	8	19	39
" red, slippery	" fulva	4	14	24	8	18	32
" hickory	" ?	4	14	22	8	19	40
Hackberry	Celtis occidentalis	5	11	21	8	16	28
Hickory, shag-bark	Carya alba	5	12	19	8	13	29
" thick shell-bark	" sulcata	5	13	21	8	14	32
" pig-nut	" glabra	5	13	22	8	16	34
Larch, American	Larix American	2	7	16	6	13	30
" European	" Europa	4	11	24	8	16	38
Locust, honey	Gleditschia triacanthos	6	13	26	9	14	24
Maple, rock	Acer saccharinum	4	12	21	6	15	25
" black sugar	" nigrum	3	11	18	6	14	21
" red	" rubrum	8	16	31	9	14	25
" silver-leaf	" dasycarpum	9	19	36	9	16	30
" honey	" negundo	9	22	46	10	25	35
" Norway	" pseudo-platanus	5	13	23	7	16	26
Mulberry, red	Morus rubra	3	9	14	7	13	22
Pecan	Carya olivæformis	4	11	19	8	13	26
Poplar, Lombardy	Populus dilatata	8	22	46	12	25	50
" silver	" alba	8	18	40	10	20	35
Oak, white	Quercus alba	3	10	19	7	14	24
" red	" rubra	3	12	22	7	15	30
" scarlet	" coccinea	3	9	18	7	14	23
" yellow bark	" tinctoria	3	12	24	7	14	26
" burr	" macrocarpa	4	13	23	8	14	23
" chestnut	" castanea	3	8	16	7	12	18
Osage Orange	Maclura aurantiaca	5	9	13	8	14	20
Walnut, black	Juglans nigra	5	12	21	7	14	24
" butternut	" cinerea	8	18	30	9	16	28
Willow, gray	Salix ?	6	22	40	10	19	38
" crack	" fragilis	5	15	30	8	18	30
" yellow	" vitellina	5	17	40	9	18	35
Basswood or Linden	Tilia Americana	6	18	40	10	20	38
Chestnut	Castanea vesca	3	11	19	8	15	29

In preparing the soil of steep hills, the margins of water-courses, as well as rocky or gravelly soil, the use of the plow is impossible, and in such situations the spade alone must be used. On such tracts a few trees should be carefully planted and they had better be of some vigorous variety inclined to sprout. When the ground is partially shaded by these trees, acorns, nuts or even small trees may be successfully planted and will flourish if room is gradually made for them by the axe. For such sites, no tree could be better adapted than the Black Locust, and it is doubtful if the planter would ever wish to eradicate it in favor of any other species.

In planting a continuous grove I recommend the distance of four feet as the best space to leave between rows. One can easily cultivate a strip of that width by going over it twice, and so long as cultivation is needed, there will be abundant room for the passage of a horse. If rows were established much less than four feet apart cultivation would be impossible after a few years, and the little trees would need to be thinned when so small that the thinnings would have no value, and the labor and expense of cultivating them would go for naught.

In the rows, plants ought in no case to stand closer than 1 foot, if it be intended to grow healthy plants. In Europe, beautiful hop-poles have been grown by planting Larch trees 18 inches by 2 feet, and hoop-poles could be grown as close; but the destruction of the plantation is in such cases looked for as a matter of course, and as regards hickory hoop-poles, it would be better to annually destroy a portion of the plants by summer cutting until the whole crops should be grown on stools 4 feet apart each way.

After the first year, then, all trees ought to be at least 1 foot apart. Where they crowd closer, they can be easily pulled out in the spring, or may be transplanted to points where they are needed.

From a well-managed plantation not a few trees may be sold at different sizes for ornamental purposes, and I take it for certain that such sales of stuff which is worthless in the plantation, would more than pay the expenses of the first ten years in almost any locality.

Where it is necessary to transplant from a seedbed, the plants should be at once set in rows both ways. They may thus receive perfectly clean culture without any hoeing, and will rapidly grow up into profitable saplinghood.

THINNING AND PRUNING.

Thinning and pruning is a work of much importance, and the principles on which it should be practiced have been perfectly elucidated by foresters and orchardists in Europe.

It should be understood, in the first place, that no tree designed for timber should have room to expand its branches laterally into what may be regarded as its normal shape. As rapidly as is consistent with the health of the tree, the stem should be elongated, and should be bared of branches, for branches make knots. The planter cannot expect to prune his trees into this shape. In this country pruning to this extent would be immoderately expensive; in any country the removal of large, healthy branches is injurious to most trees, and absolutely ruinous to others. To encourage the upward growth, and to check the nutrition of lower branches, trees are so planted as to slightly crowd each other, and when the vigor of these lower branches is gone, they may be removed without any shock to the tree or injury to the quality of the timber in the trunk. On all coniferous trees the death of shaded branches is extremely rapid, and this is particularly fortunate, since the cutting away of live branches from the pines and spruces is followed by copious bleeding for years, to the exhaustion of the trees, and often to the injury of the bark. The scalding of bark by the resinous sap of pines has been observed by planters in the West, and one of them recommends to leave a stump four inches long when amputating live branches, and to saw off this stump when bleeding has ceased. But in the plantation it would be better to permit a branch to die without disturbance, and so avoid all unnecessary check to the trees. The planter should, however, be prompt to remove dead branches, because so long as the wood of the trunk is creeping over and enclosing a dead branch, it is making a knot, which will be deep in proportion to the forester's neglect.

While it is not possible to grow good, straight timber cheaply, without crowding, the planter should be warned against crowding too much. It is sufficient that a tree should have its branches approached or slightly touched by its neighbors. Thinning should be commenced very early, and should be attended to at least once in three years in any plantation less than 25 years old. If long neglected, trees grown too thickly begin to show all the symptoms of old age, and actually die. And even when, before the death of the trees, thinning is commenced in an overcrowded plantation, they are so tall in proportion to the thickness of their trunks and roots, that they are broken and uprooted by winds. In short, the thinning of plantations is like many other sorts of rural labor; if it be neglected too long it becomes impossible, or else useless.

This constant thinning is its own reward, since, after the first seven or eight years, every tree will be available for stakes and fuel, and afterward for posts, beams, etc., etc.

Observation of the mode of establishing forests by nature, as well as an

examination into successful artificial planting in Europe, will convince any one that the growing of tall, straight timber by this mode of gentle crowding is possible, without injuring their health in any degree. Indeed we may say, with much support from known facts, that their health is secured by their growth close together. They need the shaded ground and the protection from winds which they mutually give and receive; and they are relieved by art from the severe competition whereby trees are more than decimated in natural groves. Eminent orchardists are beginning to recommend, even for fruit trees, planting so close that the soil is soon shaded and subsequent thinning so gradual that it is kept shaded. (Warder in Rept. of O. S. B. Ag., 1870, p. 258.)

The forester, unfortunately, will sometimes need to cut live branches, and will find that mere crowding will not supply the timber tree which he desires. Two hundred and fifty years ago, William Lawson, discoursing of orchards, remarked that "Man himselfe left to himselfe, growes from his heauenly and spirituall generation, and becommeth beastly, yea diuellish, to his owne kinde, unless he be regenerate. No maruell then, if Trees make their shoots, and put their spraiies disorderly." Undismayed by the disorderly habits of trees, this quaint old author lays down principles of pruning so sound, that we could scarcely improve upon them in our time. The chief precept in pruning is to "Beginne betime with trees, and doe what you list: but if you let them grow great and stubborn you must doe as the trees list. They will not bend but breake, nor be wound without danger. A small branch will become a bough, and a bough an arme in bignesse. Then if you cut him, his wound will fester, and hardly, without good skill recover: therefore, *obsta principijs*. * * * Neither let any man euer so much as think, that it is unprobable, much lesse impossible, to reforme any tree of what kinde soener. For (believe me) I haue tried it, I can bring any tree (beginning by time) to any forme. The Peare and Holly may be made to spread, and the Oke to close."

In forestry we have only to prune the ends of such branches as are inclined to grow too long or too high, and to give our timber trees a trunk free from large branches. A branch once grown greater than its fellows, is apt to overtop them all. Lawson justly remarks on this, that "the sap presseth upward; and it is like water in her course, where it findeth most issue, thither it floweth, leauing the other lesser sluices dry: even as wealth to wealth and much to more." Any such rampant, growing branch should be promptly removed or checked.

All needful pruning tools have been mentioned by this same old author, and I present his catalogue: "For the great Trees, an handsome long

light Ladder of Firpoles, a little, nimble, and strong armed Saw, and sharpe. For lesse Trees, a little and sharpe Hatchet, a broad mouthed Chesell, strong and sharpe with an handbeetle, and (which is a most necessary Instrument among little Trees) a great hafted and sharpe knife or Whittle." Particular attention should be given to the advice to have every instrument "sharpe" except the ladder and the handbeetle.

I recommend, then, in the establishment of forests—

1st. A deep, mellow soil, well tilled where possible.

2nd. The planting of seeds where trees are wanted.

3rd. In the case of evergreens, and all other species having small seeds and weak seedlings, transplant the seedlings, in the spring, from a seed bed or nursery row. Do this when the plants are less than one foot high, and keep the soil so clean that the little things will neither get lost nor smothered.

4th. Plant everything in rows to facilitate cultivation, and, where it is possible, plant in rows both ways.

5th. In the case of expensive trees, or of trees difficult to transplant, it is best to take extra care in transplanting and encouraging a few to grow. Set them 20 feet apart, and have the intermediate soil occupied with nurses of some other cheaper variety. These nurses should be thinned out by degrees.

6th. Thin every young plantation at least as often as once in three years. Bear in mind this double-headed rule, which may be variously expressed: Crowd trees so that the lower branches shall be successively smothered; but thin them so that the trees cannot smother each other. At the most, have your trees separated by a space equal to one-half of their height: at the least by a space equal to one-third. After thinning, each tree should lack but little of touching his neighbors; but it is time to use the axe when the trees interlace their longer branches to the depth of two feet. However beautiful, a round-headed or forked tree is worth little for timber; but on the other hand, the greatest failure in forestry would be a grove of slender May-poles, too sickly to grow and too weak to stand alone.

7th. Break all other principles of thinning rather than violate this: Spare the strongest; cut out the weakest.

8th. Prune to a single stem where crowding fails to secure it. Take the head off of any branch that is too aspiring. If a healthy tree has made a bad start, cut it off at the ground in winter: it will make sprouts, one of which should be spared. Beware of this practice on conifers: Cut off sickly branches at the trunk. Wait until the branches of evergreens actually die.

9th. Remember these words of Lindley, when tempted to cut trees into shape: "Prune not at all. * * Plant thickly, thin constantly, stop carefully, and leave the rest to nature." And again: "Pruning may be regarded as a necessary evil to which the wise must submit because of the ignorant; the careful to cure the evils inflicted by the careless."

10th. Cattle and sheep must be rigidly excluded from young plantations until long after cultivation has ceased. Swine are not so apt to pack the soil, and can do no injury to bark or branches. They might, therefore, have the run of a grove and little or no harm result. Judging from the immense damage which hogs can do in a meadow or pasture when permitted to "root," I would almost venture to suggest that a few hogs could make themselves useful in young timber by upturning all chance spots of turf, and lightening the soil generally, in a search for worms and snails. No creature should tread the soil when it is wet and liable to be compacted.

POLLARDS.

Much wood is cut in Europe from the branches of trees without the destruction of the trunks. These pollard trees, standing near dwellings or on the boundary lines of property, are conspicuous elements of the trans-Atlantic landscape. It is generally unsafe to make predictions, but I hazard the expression of a firm belief that, to the end of time, no free-born American will ever climb a tree to cut fire-wood! Perish the thought! To hew down an oak of four centuries' growth for a mere chance of a worthless "coon" is far more conformable to the national genius. Yet there is something to be said in favor of pollard trees. They furnish abundant supplies of fuel, which may be of fair quality, and from land which could not be devoted to any regular and permanent plantation. They yield also the best sort of withes for tying and for rough basket-making.

The cultivation of these trees is to be recommended to all who have dams to maintain. I believe that nothing can take the place of brush-wood in binding together the stones and other material of dams; and I have seen brush cut from tall trees, with great danger and labor, and hauled a considerable distance for this purpose. A little forethought on the part of the proprietors would have provided willow, cotton-wood or other trees, at a point immediately above the dam which I have in mind, at points where the river was playing havoc with the banks. Here these would have protected the bank, and at the same time would have yielded a perpetual supply of brush, where it could be easily loaded on a boat.

ENUMERATION OF SPECIES—DECIDUOUS TREES.

I enter now on an enumeration of varieties suitable for growing in Ohio, and will have occasion to give further hints as to cultivation of the different species. In preparing this catalogue, I have consulted Dr. Brown's "Forester;" Dr. Warder's "Hedges and Evergreens," and his reports to the Cincinnati Horticultural Society; Andrew S. Fuller's "Forest Tree Culturist;" President Bryant's new work, "Forest Trees;" besides valuable papers, too scattered and tedious to mention, in Reports of Illinois Agricultural and Horticultural Societies, of the Massachusetts State Board of Agriculture, of the Department of Agriculture, etc., etc.

Alder (Alnus incana).—Common to Europe and America. Flourishes in the wettest soil, and is unworthy of cultivation elsewhere. Grows freely from cuttings. Alder wood burns moderately well and makes excellent, soft charcoal for gunpowder.

Ash.—The White Ash (*Fraxinus Americana*) grows rapidly for two centuries. It makes, probably, the best wood in the world for handles and bent work. This species will not thrive over gravel, but flourishes in any rich soil. Blue Ash (*Fraxinus quadrangulata*) grows as rapidly at first, but does not attain the great size, at a great age, which characterizes the white ash. This species endures a wetter soil. We have not less than four other species, but none comparable to these. All the ash trees are inclined to make a straight trunk, with little taper and few branches. The Ash of Europe is a very valuable tree, but not so good as ours.

Seeds ripen in the fall. They will not germinate if allowed to become once very dry. I have failed to produce plants from nice, plump seed, sowed soon after ripening, and I therefore suggest that the plan recommended for the European Ash would be successful here; that is, to keep the seeds mixed with damp earth for 18 months after ripening, and sow in March or April. Seed should be sown in drills, 15 inches apart, and covered $\frac{3}{4}$ inch deep. Keep your plants of this species clean of weeds. The ash is well provided with fibrous roots and transplants easily.

Basswood.—See "Linden."

Beech (Fagus ferruginea).—A most hardy tree, growing well on the thinest soils, but not a rapid grower anywhere. The wood is good for burning, and makes the hardest and best charcoal. In the arts, the wood is desired for its hardness, although it is very brittle. The wood is also remarkable for durability under water.

Seeds ripen in the fall, and should be either planted at once or kept moist and cool, in earth or sand, in some situation where mice cannot reach them. Young trees should not be touched with a knife until well

established: afterward they will endure pruning into a hedge. The Beech of Europe (*Fagus sylvatica*) holds its leaves throughout the winter, as some of our oaks do, and as our beech seems half inclined to do. It is, therefore, used for screens, and found to be as efficient in winter as ever-greens. Plant seeds $\frac{3}{4}$ inch deep early in spring, or as soon as ripe.

Birch.—We have not less than five species. *Betula alba* is a small tree, slender and white-barked, and of no great value. The Canoe Birch (*B. papyracea*) is a large tree, with fine-grained wood and very tough bark. Red Birch or Black Birch (*B. nigra*) has similar size and wood. Yellow Birch (*B. excelsa*) and Sweet Black Birch (*B. lenta*) are of no economic importance. The only species recommended to planters are the canoe birch, with heart-shaped leaves, and the red or black birch, with broadly ovate leaves, slightly pointed at both ends.

Birch wood is, unfortunately, subject to rot, even when worked into house furniture. It is chiefly valued for fuel and soft charcoal. No wood is more desired for fish barrels, in which of course it cannot rot. It is, and will be, chiefly used for fuel and soft charcoal.

Seeds are produced, in catkins, in late summer, and should be kept in moist earth until early spring. They should be planted in soil as fine as meal, and, on account of small size, should not be covered more than $\frac{1}{4}$ of an inch deep. Wild seedlings, 6 to 15 inches high, can be procured from Michigan for \$3 per 1000, which is cheaper than they can be grown here.

This species flourishes on the poorest soil, and endures transplanting well.

Butternut.—See "Walnut."

Catalpa (*Catalpa bignonioides*).—This handsome and valuable tree is native in all the Southwestern States, but is everywhere rare. The few ancient groves in southern Indiana and Illinois may be native; and, at all events, the tree is hardy in any part of Ohio. The tree is not a large one at maturity, but makes a fine trunk in groves. (A. M. Brown in Ill. Hort. Rep. for 1868, p. 148.) The rapidity of its growth in youth is astonishing, and it seems to grow equally well on any soil.

Catalpa wood is coarse in the grain, light, and brittle. Its value arises from its great durability, even when exposed to air and damp at the same time. This quality of the wood was pointed out by Gen. Harrison as long ago as 1825, in an address delivered at Carthage, Hamilton county. He became acquainted with the tree at Vincennes, Ind., where there are some aged trees at this time, and where he was once resident as Governor of the Northwest Territory. The durability of Catalpa wood has been pointed out by planters in more recent times, but the tree has not been much grown. It is to be recommended for fence posts.

The seeds are borne in long pods, and are small and delicate affairs. I have found them certain to germinate in ordinary garden soil, and in the full glare of sunlight. The young plants are so sturdy that I recommend the planting of seeds where the trees are desired, notwithstanding their smallness. Sow in spring, and cover not more than one-fourth of an inch.

Chestnut.—This tree (*Castanea vesca*) combines a wonderful number of desirable qualities. Its wood is more durable than most sorts; it makes good fuel; its timber splits readily, and is of fair strength and great beauty of grain; and its nuts are very valuable, worth from \$6 to \$10 per bushel in any city.

The Chestnut tree demands a dry soil, and is liable to winter kill on any soil lying on clay. It flourishes in the leanest gravel ridges and mountain slopes. Its growth is rapid, and the tree is sure to send up vigorous sprouts from the stumps of any tree cut in winter or early spring, and, when this is desired, the stumps should be dressed into some shape such that they will shed water. Sprouts of this sort have been grown in Scotland to a length of 30 feet and a diameter of 4 or 5 inches in eight or ten years time. Many such crops can be and have been taken from a plantation without replanting, and a small permanent plantation of this sort would be one of the best sources of rails, stakes, &c., on a farm.

The nuts send up such strong seedlings, and the tree is so impatient of transplanting that I would, by all means, recommend the planting of seeds in hills 4 feet apart each way. Two nuts should be planted in a hill, and the plants thinned after a year. The nuts ought to be planted when fresh or be kept moist through the winter, as they are liable to rot rather than grow when once dried. A gentleman from Carroll co., Mo., reports that he has succeeded in germinating dry seeds by the following method: Soak the seeds in water for ten days in the spring, but change the water every day. Then keep the nuts in damp sand until the root appears.

Coffeenut (*Gymnocladus Canadensis*) flourishes only in rich soil and is too small to be much esteemed. Nevertheless, it is inclined to make a long, straight trunk which, even in young trees, consists almost entirely of rose colored, compact and fine grained heart-wood. The tree is too small and too rare to have a reputation, but M. Bryant says it makes excellent furniture.

The tree also propagates itself freely by suckers springing from surface roots. Seeds are large, ripe in the fall, and should be sown early in spring.

Cottonwood.—See "Poplar."

Cypress.—Our only species (*Taxadion distichum*) generally known as Louisiana cypress, abounds in the Southern States, and is native into Vir-

ginia and Southern Illinois. Louis L. Koch reports specimens of this tree in the bottom lands of Pope county Illinois, 120 feet high and 12 feet in diameter. It extends itself over some high cold Mexican plateaus, and is perfectly hardy in the climate of New York City. On Illinois prairies, it gives great satisfaction, and is more esteemed by some planters than the European larch. The tree is most accommodating in its habits, and will grow almost equally well in swamps down the Mississippi and on gravelly ridges in New Jersey.

The wood is light, but of excellent of quality. It is almost as durable as cedar, and grows more rapidly. Mr. Fuller, who is our authority for saying the tree will flourish in gravelly soil, asserts that cypress stakes can be grown 8 to 10 feet long in 5 to 6 years from seed, and at the rate of 10,000 per acre.

Seeds come from the South, and may be procured from New York seedsmen. Sow either in spring or fall, and in the open ground. The plants should be moved the first year, either into the plantation or into a nursery, because they make but few fibrous roots, and these could not be dug with the seedlings a second year.

A group of trees 21 years planted in Spring Grove Cemetery, vary in girth from 5 feet 8 inches to 7 feet 6 inches. (Warder's report.)

Elm.—In Ohio, the white elm (*Ulmus Americana*) is the most common species; but the red or slippery elm (*U. fulva*), was abundant in the primeval forest. The corky white elm (*U. racemosa*), grows in New England and New York, and abounds in Michigan and Indiana. It is also known as the hickory elm. The Wahoo or Winged elm (*U. alata*) mostly grows in the South, and, like the preceding, is rare in Ohio. I shall be visited with the contempt of many woodmen for denying the existence of the hickory elm in Ohio; but the woodsmen are in the wrong. They give the name of hickory elm to any white elm which puts forth knots and small spray along its trunk, and which may happen to have its bark less piled into longitudinal ridges than the average.

The wood of elm trees seldom or never opens when seasoning, and, as it is almost impossible to split it, it is in great demand for hubs and gun carriages. Red elm has been pronounced superior to other sorts, but I know not why. The hickory elm is probably tougher than any other; both are used because they split readily. No wagon-maker would refuse logs of white elm, of suitable size for hubs, and not one in one hundred could distinguish the different sorts of elms. Only young trees are wanted—but they must be grown in open lands—such as can be easily grown in 10 and 15 years. The English elm (*U. campestris*) is in no respect better than our natives. The Scotch elm (*U. montana*) can be split, and grows very rapidly, and possibly may be valuable to us.

Seeds of all the elms ripen soon after the leaves have been put forth. They need to be sowed within a very few days after ripening, and must be barely covered with soil. If well treated they will grow one foot the first summer. Elms can be transplanted at almost any age, and one cannot go amiss in transplanting volunteer seedlings out of the woods and fence corners.

Hackberry.—(*Celtis occidentalis*)—was little esteemed by those who cut away the original woods, but has been so praised by growers in Illinois that I mention it here. The tree has many varieties, some of which are low, straggling bushes, and some of which connect the above species with *Celtis Mississippensis*. It would not be surprising if we find some trees fit for cultivation, which in the forest are of second or third-rate quality, and this is worthy of experiment.

Seeds are borne in bluish berries, ripe in the fall, and should be sowed early in spring. The tree sends up sprouts into ground not shaded.

Hickory.—Only two sorts are recognized by most farmers: one sort with edible nuts and rough bark, and another sort with bitter nuts and smoother bark. Four valuable species may be readily distinguished. The most common—shell-bark or shag-bark hickory (*Carya alba*)—is perhaps the largest of the family. Its bark need not be described. Nuts are small, white, thin shelled, somewhat flattened, and almost pointless. Leaflets are 5. The white heart hickory (*C. tomentosa*) is nearly or quite as large a tree, and has or is reputed to have more sap wood and less dark heart wood than any other hickory. The bark is cracked on older trees but not separated in plates. The nut is somewhat six-angled, of a light brown color, and endowed with a shell so thick and hard that the kernel can hardly be extracted, and on this account the tree has been locally called mocker-nut. Leaflets 7 to 9. The small-fruited hickory (*C. microcarpa*) has a nut shaped like the last species, but it is quite small. The pig-nut hickory (*C. glabra*) is well known. The thick shell-bark hickory (*C. sulcata*) is not very distinct from the first species named above. Leaflets are more numerous—7 to 9—and the nuts are slightly flattened, pointed, and of a yellow color. The pecan (*C. olivæformis*) is too delicate in its growth to compare with the above, as a timber tree; but its nuts are generally worth as much as almonds, Brazil nuts, or other imported sorts.

There is little choice among the five sorts enumerated first in this list. The shell-barks perhaps grow faster; the white heart perhaps has less heart wood; and the pig-nut perhaps is a little tougher in its sprouts than any other variety. The timber of these species cannot be certainly distinguished when offered for sale in logs of small diameter; and few

woodmen or buyers make any classification of hickories, except into shell-barks and pig-nut.

Nuts should not be permitted to dry, but may be kept moist through the winter or may be planted in spring. The seedlings are so strong in their early growth, and so impatient of removal, that it is far better to plant seeds in hills as recommended for chestnuts.

Larch.—Like the deciduous cypress, the larch is a conifer, and hence might be discussed with the evergreens. I place it here merely because it sheds its leaves annually. Our American larch (*Larix Americana*), known also as black larch, tamarack and hackmatack, is a handsome tree, able to endure a great amount of wet. The larch of Europe (*L. Europea*) is, on the contrary, ruined by wet feet, and grows naturally on gravelly soil and steep rocky slopes. This species excels the American in every desirable quality. Its heart wood is abundant, even in very small trees, and, as is the case with most conifers, is more valuable than the young sap wood. The tree naturally grows erect and makes small branches. The rapidity of its growth is not excelled by any tree whatever. In Scotland they have a proverb that "a larch will buy a horse before an oak will by a saddle." And Brown says: "There are very few purposes for which oak is used for which larch would not answer as well. It is a rapid growing tree, and attains maturity long before the oak. I have seen larch trees little more than 30 years old sold for 60s. each, while oaks of the same age and growing upon the same soil in the same neighborhood, were not worth 10s. each."

The durability of this wood is such that larch vine props have been in existence in French vineyards for so long a time, that the present proprietors have no knowledge of when they were first used. Young trees are as durable as the old, and some persons believe that the bark makes the wood more lasting.

Larch seeds are very small. They may be procured from the more prominent seedsmen. Sow early in spring in very mellow soil. They must be covered not more than $\frac{1}{4}$ inch deep, and a half shade should be provided for the young seedlings.

Linden.—The linden is a tree valuable on account of its tough, fibrous bark, as well as its honey-producing flowers. The wood is white, soft, light, and extremely tough. Musical instruments, the sounding-boards of pianos, and a great many turned articles, are made of this wood. Nothing can equal this wood for curved panels on carriages. The tree is not very valuable until large enough to make good-sized plank, and on this account it is not recommended to plant it closely. The American linden (*Tilia Americana*) is very similar to the European species (*T. Europea*.)

The seed of the linden is ripe in the fall, and is inclosed in a leathery hull of extraordinary toughness. Seeds are not likely to grow after they are once dried, and they should therefore be sown as soon as ripe. In Europe most lindens are propagated from layers bent down from old stools.

Locust.—Of the black locust, (*Robinia pseudacacia*,) I have already spoken in praise. A forester of Great Britain has ventured to say it was even "stronger and more durable than the British oak!" as if nothing more of praise was possible. As is usual with trees which are not very large when mature, the early growth of the locust is extremely rapid.

This tree is commended to us by its power of flourishing in grass. Every locust grove known to me has a carpet of grass; and President Brown, of the Illinois Horticultural Society, reported in 1854 that pasture was better in locust groves than on the open prairie.

Some men of experience declare that there are two sub-varieties of this tree, one with dark-colored wood, little inclined to bear seeds, and the other with whitish wood and a prolific bearer of seeds. The last variety they claim is not by any means so durable as the first. Most persons of information deny the existence of these varieties, but the subject is one worthy of investigation.

If the seeds are mixed with moist earth in mid-winter, they would probably germinate promptly in the spring. A method of germination which has been approved by experience, is to pour a quantity of boiling water over the seeds. After this scalding, and soaking for one or two days, most of the seeds will be swelled. These should be planted, and the remainder should have a further soaking. If a mellow but moist seed-bed can be secured, this soaking may be continued until the germs appear, but it is generally bad policy to soak seeds and plant them in a dry soil.

Maple.—Of native maples we have the familiar sugar maple, (*Acer saccharinum*,) as an omnipresent type of the family. Black maple, (*A. nigrum*,) is probably not specifically distinct from the above. The white or silver maple, (*A. dasycarpum*,) grows more rapidly than any other. In rich soil it frequently grows to a height of 20 feet in three or four years from seed. Its wood is not so hard as that of the sugar maple, but is fine-grained and valuable. The red maple, (*A. rubrum*,) is popularly confounded with the above because it has soft wood and grows rapidly. It is in no way superior to the white species. In the above sorts of timber, trees are frequently found in which the grain is curiously waved so as to present a wood of great beauty and value. It is almost certain that this peculiarity could be obtained by grafting or budding from a tree known to furnish "bird's-eye" or "curly" maple. A plantation of this sort of wood would

be valuable beyond belief, as it is eagerly purchased both for home use and export. The ash-leaved maple or box-elder, (*A. negundo*), had considerable size in the original forests of Ohio, but it was one of the first to be cut out. It is inclined to make a round-headed low tree in open places, but has fine proportions in the timber. The wood is excellent for fuel, and can be cut and split with an ease which explains its early disappearance from the woods. All of these native species are worthy of cultivation. The silver maple endures a wetter soil than the sugar maple, but any one of them will flourish on any fair soil.

The so-called sycamore of Europe is a maple, (*A. pseudo platanus*), which, however, seems but half inclined to flourish in America. In Spring Grove cemetery trees of this species are feeble as compared with other maples. If it can be grown successfully in Ohio, it will probably be on a stiff upland soil. The Norway maple, (*A. platanoides*), has been extensively introduced both into Britain and America. It flourishes and bears seeds in this country, and is probably as valuable as any indigenous tree. In Europe it is found to be particularly adapted to a gravelly soil, and its ability to flourish in the teeth of a sea-breeze has caused it to be used in connection with *Pinus pinaster* in fixing shifting sands near the margin of the sea, and giving protection to valuable lands beyond.

The rule with the maple family is, that seeds ripen in the fall and must be kept damp and cool until spring, or may be planted in the fall. But our white maple and the red maple produce seeds early in the spring, and ripen them in May and June. They must be sowed within a week or two after ripeness, and will make fine plants the first year. Considering that the seeds of the white maple may be planted so late in the season, after three-fourths of the summer's weeds are destroyed, and considering, also, how rapid the growth of the seedlings is, I would regard it as foolish to be at the trouble of transplanting seedlings of this variety. The seeds should be sowed thinly in drills, in ground well plowed, harrowed and rolled; cover not more than one inch deep, and make the soil firm above them. It might not be amiss to plant a small amount of corn with the maple seeds. The corn would furnish a grateful shade for the first week or two, and could be easily controlled.

Among so many valuable maples it is difficult to choose. None equal the rapid growth of the white maple in its youth. But after ten or fifteen years the white maple will be found to grow slower, and the sugar maple will make annual shoots several feet long. The Norway maple is also a slow grower at first, but afterward extremely vigorous.

Mulberry.—Our native red mulberry (*Morus rubra*) produces wood which is nearly or quite as durable as the locust, and if, in any time or

place, it is found impossible to grow locust timber on account of borers, the mulberry and the catalpa would probably be the next best species for fencing posts and similar uses. The tree is not very large at its best, but it grows very rapidly at first, and soon attains such size as to fit it for use. The tree sends up abundance of shoots from the stump.

Seeds should be washed out of the ripe fruit and sowed either in fall or spring. Being so minute, they ought to be barely covered with earth. Of some species of mulberry, cuttings grow with great certainty, but only occasional trees of our species will furnish good cuttings. Layers will always grow.

Oak.—In Ohio we have several oaks of great value, and there are others in the south and the west. In fact any species produces valuable wood. For most purposes, the white oak (*Quercus alba*) is the most valuable of all. Trees, never transplanted, make a very rapid growth even when young; and the annual growth of trees one hundred years old is very large. Until twenty years ago, white oak trees four hundred years old were common wherever a good, deep clay soil was found; but now such trees are either gone, or are dying at the top in all settled districts. No healthy, large oak tree ought to be cut in Ohio at present prices. Save them, with the assurance that they will be needed by millwrights and ship builders. For the construction of large water wheels nothing can be substituted for oak, and no wood is so excellent where great strength is desired in a long beam. Oak is desired by underwriters for all parts of ships, and builders will not use any other sort of wood for submerged parts if they can obtain white oak at a fair price. A stick of this sort of wood was got out in Canada West, some years since, which measured fifty-one feet in length, and squared forty by forty-one inches. The bur oak, (*Q. macro carpa*), the scarlet oak, (*Q. coccinea*), the red oak, (*Q. rubra*), and the quercitron oak or yellow bark (*Q. tinctoria*), are very valuable also, and are worthy of being experimentally planted. But our white oak is king of them all. A great fault of oak wood is a tendency to shrink, year after year, for a long time. Lumber sawed from old dry logs will shrink three-eighths of an inch to the foot. Oak wood is not very good fuel, and this fact alone will discourage its planting.

I recommend the planting of oaks about twenty-five feet apart. The space between might be occupied by some rapid growing tree, of a sort which is valuable when young. For this purpose nothing could be better than the larch. Acorns should be planted among the larch trees. The young oaks, in such a situation, would make a very rapid growth. The larch trees could be gradually thinned, and would be almost as numerous as if the oaks were not there. At the last the oaks would stand alone.

In Europe it is very common to mix coniferous trees with hard wood species in this way. The nurses are generally larches, Scotch pines or Norway spruces, and the less numerous trees are either oaks or some species which is high-priced, tender, slow to grow at first, or of little value when young.

Osage Orange.—I mention this little tree (*Maclura aurantiaca*) because of the quality of its wood, rather than because of its size. It is of a handsome color, and combines hardness and elasticity in a great degree. The Indians of the south-west, where this tree is native, used its wood almost exclusively for their bows, and called it "bow wood." The osage orange is closely related to the mulberry, and partakes of the durability of that tree. Mr. Bryant states that a rotten branch of this sort of wood was never seen. The wood slowly wastes away from the outside, after the manner of the black locust, but is never penetrated by rot. The tree grows but slowly after ten years, and considering its small size and thorns, we may perhaps not take it into favor. Yet I recommend an experiment with it the more cheerfully, because the plants are grown by the million for hedging purposes, and can be purchased at \$2.50 per 1,000.

Pecan.—See "Hickory."

Poplar.—The poplar family is a large one, and includes trees of extremely diverse appearance. The Lombardy poplar (*Populus dilatata*) grows upward at an astonishing rate, and makes a good nurse. The white poplar or silver leaf poplar (*P. alba*), and the variety known as the Abele, which is said to sprout less, are beautiful and vigorous trees. The sprouts are a great nuisance in the lawn, but when the trees are planted on the banks of a stream, as at Spring Grove Avenue, they send a net work of branching roots down the sides of the channel, and thus prevent all washing and caving. Of native poplars, none is more valuable than the cottonwood (*P. monilifera*.) This is a large and noble tree of wonderful vigor. Botanists are in doubt as to whether the angled cottonwood is a real species, or only a variation of the ordinary cottonwood; and I may add that certain prairie planters maintain that the ordinary type of cottonwood has a variety with yellow heart-wood, which splits more easily than the whiter wood. The balsam poplar (*P. candicans*, called tacamahac in some localities), grows very fast at first, but soon reaches its dotage. A variety of this species (?) is the balm of Gilead. The smaller aspen (*P. tremuloides*), is a worthless little tree; the large toothed aspen (*P. grandidentata*), is larger and better. The lumber of the poplars, though light, soft and brittle, has its uses. It is so well able to endure percussion and friction that it is a favorite lumber in Europe for floors, not of houses only, but of carts and wagons. The wood of the white or

silver leaf is much used for bowls, trays, all sorts of turnery, and for packing boxes. Michaux recommended its extensive planting in America as a substitute for the wood of the tulip tree. No species is more valuable.

Seeds of the poplars are very minute, and it would be almost impossible to collect them. Any poplar grows freely from cuttings, so that it would be folly to think of seeds. The cuttings should be about one foot long. Set them four feet apart in rows four feet apart, and give good culture for a year or two.

Poplar, so called.—See "Tulip Tree."

Sycamore.—This beautiful and thrifty tree (*Platanus occidentalis*), produces a light colored wood of handsome waved grain, which sometimes is almost as handsome as waved maple. The wood is hard, but is not valued, probably because it was never abundant, and is so hard to split. It is used for square timber in barns and dwellings, and so far as I have been able to learn, it is a moderately good wood for such situations.

Seeds ripen in the fall and remain on the tree during almost the whole winter. They should be sown in early spring, one-half an inch deep. Sycamore cuttings, particularly cuttings of wood two or three years old, grow almost certainly.

Tulip Tree.—It is with a real regret that I express doubt whether this tree is available for artificial culture. The tree (*Liriodendron tulipifera*), too often miscalled poplar, grows rapidly and yields a soft wood of undoubted excellence. But the seeds are very scarce, the seedlings are rather small, and it is almost impossible to transplant trees at any age. And after all, the wood is little better than linden wood for any purpose, and not half so good for most. Seeds ripen late in summer or in early fall. They should be immediately sowed.

Walnut.—We have the black walnut (*Juglans nigra*) and the butternut or white walnut (*J. cinerea*), native, and we can grow the English walnut or Madeira nut (*J. regia*) with care. The black walnut is, by all odds, the finest timber tree. Transplanting is ruinous to it, but seedlings left undisturbed will make an enormous growth. Dr. Warder reported the growth of trees in Kansas to the height of eight feet in three years from the seeds; and I myself have seen an equal growth for one and two years in the case of trees which sprang up from nuts which a squirrel had buried in some flower beds. Some have objected that the dark and valuable heart wood does not appear in this tree until it attains considerable age, and that the tree is most valuable when two centuries old. But any tree is most valuable when two hundred years old, and we can say a great deal in favor of the walnut. If we can establish a plantation as easily as we can

raise a crop of corn, which is true; if the trees will grow very rapidly; if the thinnings will make good fuel; and if every pole will make a good, durable rail, we had better begin to plant walnuts. It is more than probable that, within twenty years, there may be a demand for the white sapwood as well as the heart of walnut, and happy the man who can meet that demand with young trees. And when the planter's day is done, how much harder will it be to leave an acre of land, with forty walnut trees on it, than it would be to leave the naked land? I am very much inclined to maintain that, while this tree is good to plant for one's heirs, it is valuable at any stage of growth, and as well adapted to our wants as any other one species. The butternut is highly prized for its beautiful wood, boldly shaded with brown. House-builders truly say that "oak will shrink every time it is planed," but the butternut wood has finally ceased shrinking before it is half seasoned, and will not afterwards open a mitre joint even. The tree is naturally inclined to make a clean trunk, which, in part, compensates for its weaker growth. The English walnut is delicate in its growth and constitution.

The nuts of these species will be an element of the profits from a plantation. The crop of black walnuts was abundant during the past summer, and yet they are worth considerably more per bushel than corn this winter (60 cents per bushel in Hamilton.) Butternuts are much more valuable, and the supply is so scant that they have no market price.

The best method of growing and cultivating has already been indicated. Choose a rich soil; make it very mellow and smooth by plowing, harrowing and rolling; plant nuts in hills four feet apart each way; plant two and a half inches deep in the fall, or, as is more often recommended, keep the nuts damp and exposed to frost during the winter, and plant in early spring. Clean culture will pay.

Willow.—Nature was not kind to us when she gave us so many worthless species of willows. Our valuable trees of this family come from Europe. The white willow (*Salix alba*) had the misfortune to be extolled as a hedge plant, and has acquired a bad reputation by its utter failure to keep the promises made for it. Really it, as well as its variety, the golden willow, is a vigorous and valuable tree. *Salix fragilis* is particularly valued in Europe, but I do not know that it has an American reputation.

Willow wood is soft, but good for many purposes. It is as valuable as poplar wood, and is more durable when kept dry. S. Edwards, of Illinois, reports a willow rail which served in a fence for twenty-seven years, and he says willow stakes will last eight years. The wood is, therefore, not to be despised, particularly when we recall its extremely rapid growth.

The propagation of willows is easy. Set cuttings in good, mellow soil,

early in the spring. Cuttings of stout wood are preferable to switches. Willow trees make no attempt to heal large wounds, and this should be borne in mind by the growers.

EVERGREENS.

Cedar.—This is, truly, everybody's evergreen. The red cedar (*Juniperus Virginiana*) thrives in any soil. It is liable to the attacks of a fungus, which, however, seems to hurt it but little, and for only a few years in succession. Sometimes, on very rich soils, it dies suddenly with a mysterious blight. But generally it grows on rapidly, without much regard to soil or site. When established, it rarely grows less than one foot in height annually. The tree endures crowding by its own or other species. The cedar is our most docile evergreen, if I may so use the word, and endures almost any amount of pruning.

The wood is scarcely less durable than that of the locust. Its lack of strength is more than paid for by its fragrance, its handsome color, and its capability of polish. On account of its odor being repulsive to moths, it is worked in closets and chests and laid in floors.

Seeds are borne in berries ripe in early winter. They should be exposed to the weather after mixing with earth, and need not be planted for 18 months. The little seedlings want a half shade for a time. Young trees may be easily transplanted, if the roots are not allowed to become dry.

Arbor Vitae.—This well known tree, (*Thuja occidentalis*), has long been a favorite for ornamental planting. It has been cultivated in Great Britain for 300 years. It rapidly grows to a height of 30 feet, or more, when crowded, and there stops, devoting its energies to the development of seeds and handsome fringed branches. The tree is locally known as cedar, and white cedar, names which certainly do not belong to it. The wood is durable when kept dry; but the practice of cutting this timber into fencing posts, as is done in Michigan, and the selling of these for red cedar, is a fraud. The wood has very little durability when set in the ground, and is of no importance as a timber tree. [Valuable for cooperage.]

Seeds are very minute, and the seedlings so delicate that only nursery-men can manage them. Cuttings taken off in August or September will generally grow if kept shaded and moist. They should consist of new wood and a "heel" of old wood, and for one year they need the protection of a glass frame to secure constant moisture and keep out excessive cold. Almost any old tree, with branches trailing on the ground, will naturally root itself. Nature's hint should be sufficient.

Firs or Spruces.—The balsam fir, (*Abies balsaminea*), grows in wet soil,

and has given great satisfaction on the prairies, but it is generally scraggy and unthrifty after its youth has passed. The hemlock, (*A. Canadensis*,) has been called our most beautiful native evergreen. Its growth is vigorous and its bark valuable. The wood is coarse, brittle, inclined to splinter, and no way good. The tree seems inclined to grow on strong, clay soils, but it will winter-kill in such a site. It will flourish with the chestnut. Our black spruce, (*A. nigra*,) is always healthy, and never spoils its trunk with large branches. Mr. Bryant says its lumber is stronger than that of white pine. Our white spruce, (*A. alba*,) is similar to the black in its timber and manner of growth, but it is hardly so vigorous. But the best of the family is the Norway spruce fir, (*A. excelsa*,) which thrives everywhere, and never grows old. This tree is the largest of the European forest. It is admirably adapted to cultivation by the fact that its young wood is more valued than old, and that wood rapidly grown is stronger than that which has grown slowly. Among the conifers, it is claimed, that its wood is only less durable than larch, and it is tougher than Scotch pine.

Pines.—The white pine, (*Pinus Strobus*,) is known and esteemed for timber and adornment in all north temperate climates. It grows very rapidly for 100 years, and when but slightly crowded, sheds its lower branches. In fact, aged trees almost always have two-thirds of their trunks naked. This species prefers a very light soil. Cultivated timber is inferior to the huge giants of the native woods; it is more distinctly divided into layers of hard and soft wood. In rapid growth this pine excels all others. The Scotch pine, (*P. Sylvestris*,) has the most rugged constitution of this family, and, while it is valuable in itself, it is, in its native country, found particularly valuable for protecting other trees. So extensive is the propogation of this tree in Scotland in consequence of the great plantations there, that two-year old seedlings could be bought during the past year for \$11 to \$17 per 1,000. The tree grows well on any dry soil. It is much used for railroad ties in Europe, and is extensively imported into England from Norway under the name of red pine.

The Austrian pine, (*P. Austriaca*,) has coarser foliage and more rapid growth, and is an excellent sort. The red pine of Canada and the northern States, (*P. resinosa*, Norway pine in New York,) yields an extremely heavy, resinous wood.

The pines produce fewer fibrous roots than the spruces, and are more difficult to transplant; but not one in one hundred will die if they are transplanted when 6 inches high. Never plant an evergreen more than three years old unless for ornamental purposes.

Of the above pines and firs the seeds are very small and the early culture is so difficult that it had better be left to nurserymen who can and

will sell them cheaper than the farmer can grow them. Those who wish to try the experiment should sow the seeds early in spring, in soil containing a good proportion of sand. The seeds should be barely covered, and the bed must be kept half shaded and neither wet nor dry. Drouth is destructive, and much wet causes the little seedlings to "damp off." Dry sand sprinkled freely over the bed is the cure for damping.

DEATH OF THE FORESTS—CAUSE.

In some places, and to the great regret of proprietors, the remnant of forest is dying so rapidly that lumber is sold to avoid its rotting. I doubt if ten thrifty White Oak trees of a diameter of $2\frac{1}{2}$ feet can be found in Butler county; all have dead tops and are on the sure road to decay and death. Other species are similarly affected in localities, and the Board of Agriculture does well to ask for the best method of preserving the forests of Ohio. It is proper for us to enquire into the causes of this blight which is sweeping away the finest trees in the regions where growing timber just begins to be prized.

The soil of the ancient forest was spongy in its structure, and, as I have already suggested, was less liable to extremes of heat and cold and drouth than treeless soil. For ages, the trees had been drawing nutriment from all strata, so that by the fall of their leaves and the fall and decay of successive generations of the trees themselves, great amounts of plant-food had become stored in the very uppermost layers of the soil. Hence, later generations of trees had come to live mainly in this upper soil. Even the oaks and the nut-bearing trees had extensive root systems near the surface, and many genera now flourish which habitually live near the air. When the forest is brought under subjection by the American farmer the saplings are cut out "to give the big timber a chance." All small bushes are grubbed up or are browsed away by domestic animals. Brush, leaves and rotten logs are burned by accident or design. Cattle are freely admitted to the forest because at some seasons the pasturage is good and because at other times they cannot go upon tillable land.

The trees are thus injured. Suddenly the equable temperature of the forest soil begins to fluctuate. The constant humidity is also ended when sunlight and the winds are freely admitted, and when the soil is compacted so that rains are not retained in any great measure. Cattle go into the wood lot even when, after a thaw, the farmer would not dare to permit a hoof on any field. No plow ever turns up the tell tale clods in the woods and the mischief done is either not thought of at all or is soon forgotten. Probably the rapid shedding of rain is the least hurtful consequence of this tramping; the very compactness of the soil is inju-

rious to the vast system of roots which each tree has put forth near the surface, a further injury is done through a combination of these injurious influences. With sunlight freely admitted and with a rich soil and cattle grazing thereon, the best conditions exist for the spread of grass. The farmer, fancying the park-like aspect of a thin woods carpeted with green, and equally pleased with the idea of having a wood and a pasture on the same soil, often sows grass seed in the more open parts of his woods and thus in one year anticipates the slow natural or accidental spread of pasturable surface. Beautiful as is the effect of all this, it is the ruin of the large and the old trees of the forest.

Gradually, under these combined evils, the monarchs of the woods grow sickly, until, after some exceptionally dry summer or cold winter, they perish by scores, and stand mute witnesses of a deadly injury done to them. In such a case it is inaccurate to say that drouth or cold have killed them. Drouth and cold merely put the finishing stroke to the trees, after they have been reduced to a moribund state by the removal of their mulch of leaves, twigs and rotten wood, which at once protected and fertilized the soil; by the admission of scorching and drying wind and sun, by the ruinous tramping of the soil, and by the advent of grasses which starve the surviving rootlets of the trees. It will occur to the reader that these adverse surroundings are not absolutely incompatible with the growth of younger trees. Seeds of almost all native trees will germinate in a sward, and, if not molested by animals, will make thrifty saplings; and such is the vigor and elasticity of the arboreal constitution, that the younger trees of the ancient forest will thrive after the large trees have died. A young tree is no dainty vegetable. But the large trees are simply too old to change their mode of life; they cannot endure the various changes of soil which we have recounted; they cannot compete with grasses for the nutriment which, for centuries, they enjoyed without competition; they cannot, so late in life, explore new and less fertile strata beyond the reach of sun or grass-roots; and in the hopeless struggle they figuratively and literally become weak-hearted, and reach their dotage.

CURE.

I do not propose any mode of preserving the forests of Ohio except the restoration of the conditions of life under which they grew. In other words, to preserve large timber, exclude cattle, destroy grass, provide shade. All this can be accomplished by planting a young forest on the ground where the old trees grow. Thus the preservation and restoration of the forests of Ohio would be accomplished by a single operation, even as they are named in a single phrase in the title of this essay.

Will this pay? Nearly everywhere in Ohio it will. On land particularly adapted to the plow it will not be profitable to save a few scattered trees, however fine they may be. But on land not particularly excellent for tillage, and where old timber is not very thin, it should be thus preserved. I need scarcely say that on land where a young plantation would be profitable old timber should be petted. On a trunk 30 feet high and 3 feet in diameter an annual layer of wood $\frac{1}{8}$ of an inch thick is equal in amount to a layer $\frac{3}{4}$ of an inch thick on a trunk 15 feet high and 1 foot in diameter.

ENCOURAGEMENT OF FORESTRY BY STATUTES AND PREMIUMS.

And now, having completed this very imperfect exposition of what is possible and proper for Ohio farmers to do in preserving and restoring our forests, I would address a few words to the Board of Agriculture. As a citizen, rather than your essayist, I beg for liberal premiums and liberal laws to give an impetus to sylviculture in our State. Scarcely a State is more wealthy than ours, and scarcely one has done less than ours. California, the site of the grandest forests in the world, two years ago offered premiums. Nebraska enacted a liberal law encouraging sylviculture, in the year 1865. Kansas enacted a law, six years ago, which I am tempted to give in detail. It is as follows:

SECTION 1. *Be it enacted by the Legislature of the State of Kansas*, That any person planting one acre or more of prairie land, within ten years after the passage of this act, with any kind of forest trees, and successfully growing and cultivating the same for three years, and every person planting, protecting, and cultivating for three years, one-half mile or more of forest trees along any public highway, said trees to be planted so as to stand at the end of said three years not more than one rod apart, shall be entitled to receive for twenty-five years, commencing three years after said grove or line of trees has been planted, an annual bounty of two dollars per acre for each acre so planted, and two dollars for one-half mile for each mile so planted, to be paid out of the county treasury of the county in which said grove or line of trees may be situated; *provided*, the bounty hereby given shall not be paid any longer than said grove or trees are cultivated and kept alive and in a growing condition.

Section 2 provides for the issuing, by the county clerks, of warrants for this bounty, receivable in payment for county taxes; these warrants to be drawn only when a plat showing the exact location of the grove or trees is filed with the county clerk, together with a full statement of facts in relation to the growth and cultivation of the trees, which documents must be attested by the oath of the planter and at least one resident householder.

Massachusetts, in 1858, offered a premium of \$1,000 for the best plantation of forest trees, the trees to be planted in 1860 and the premium payable in 1870. Maj. Ben Perley Poore won the premium with a grove which is an honor to the State.

Illinois and Iowa have for years encouraged the planting of timber, and each of these States has offered a premium of \$1,000, payable in 1881, for the best 10 acres of artificial timber.

New York has long offered bounties, through local societies.

Missouri has enacted a law similar to the Kansas law, and perhaps better, in certain details.

Iowa, in addition to the sumptuous premiums mentioned above, exempts from taxation for ten years, property to the amount of \$100 belonging to any citizen who will cultivate an acre of forest trees for timber.

In some States, taxes to the amount of half a cent have been remitted for each tree planted.

Ohio will do—what? It is for your honorable Board to answer. The body of intelligent farmers in our State see that planting ought to be commenced on most farms. What will you recommend to our legislature; what premiums will you offer? We know what you wish to do, and we almost know what you intend.

“Dull not device by coldness and delay.”

On your suggestion the legislature will, in the present state of the public mind, enact any fair law, and planters will respond to your premiums.

Give us these groves, gentlemen of the Board, for it is in your power to do so. In return we will give you

“ * * * Thanks,

And thanks, and ever thanks: Often good turns
Are shuffled off with such uncurrent pay.”

We will be the more grateful for this noble addition to the wealth of our State for that you give us at the same time pleasant shade, whispering leaves, fragrant bloom, singing birds, living springs and soft summer showers. Long as our trees shall grow, your memory shall be green; and “fame, that all hunt after in their lives,” shall be yours, without the terrible price which the great pay for it.

BREEDING OF CATTLE.

BY T. J. JAMIESON,
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Many people must have observed with some degree of surprise the prices given at certain sales of live stock during the past few years. When heifers sell for a thousand guineas and bull-calves at a like figure, we naturally ask what peculiarity there is about the animals to excite so keen a competition. To the uninitiated many of them seem no better than might be picked up in a market at a very moderate price; but it is evident there must be some hidden virtue, real or supposed, that acts as a charm on their admirers. Lords and commoners assemble around the ring, and the bids rise rapidly by 50 guineas at a time, and men come from America and far Australia to secure some of the lots. On inquiry, we are told it is Bates' Blood, or, it may be, Booth's that constitutes the charm, or perhaps the animals are of the Duchess or Oxford tribe; that it is not so much the beasts themselves as their pedigree that is the attraction. The competitors are anxious, eager men, and—

Their expression is so solemn, and so earnest is their tone,
That nought would seem worth living for but "red and white and roan."

The white bull-calf just knocked out at 1000 gs. is entitled Duke of Oxford the 20th, and its lineage, running through many a far-famed sire, is recorded in the catalogue for ever so many generations." And who is Bates? the stranger may ask, and what is the Duchess blood that it should be so famous? As the breeding of cattle has become a sort of science, and is regulated by laws or conditions which seem to apply, not only to the animal kingdom, but also to the human race itself, the subject is one of considerable interest, not only in regard to agriculture, but also on account of its relations to biology at large. The record of facts connected with the breeding of domestic animals, which has been now accumulating for many years, may be studied with advantage even by those who have no special interest in the pursuit itself. There is every reason to believe that pedigree is of importance in regard to the mental faculties

as well as to the bodily features and constitution, and the progress of investigation leads us to suppose that every peculiarity of mind and body may be inherited. Some even hint that there is such a thing as hereditary brains, and pedigree tells in a Hohenzollern as well as in a Shorthorn.

No one paid more attention to pedigree than Thos. Bates, who brought the Duchess tribe of Shorthorns first into public notice. He was a native of Northumberland, born in 1775, and sprung from a family which had long been resident in that county. Being in easy circumstances, and owner of some landed property, he was able to devote his attention to the rearing of cattle under very favorable circumstances. He had also the advantage of a tolerably good education, having at one time intended entering the Church. He was well acquainted with Charles and Robert Colling, although considerably younger than either of them, and knew a good deal about both their herds. The northern counties of England seemed to have possessed a good kind of cattle for a considerable period, owing apparently to the natives of the region having a taste that way, and it is evident many excellent herds existed before Charles Colling began to devote his attention to the subject. Early in the last century, we learn that several of the landed gentry at Northumberland prided themselves in the excellence of their cattle. The Smithsons of Stanwick were among these, and Sir Hugh Smithson, who married the heiress of the noble house of Percy, used to weigh his cattle periodically, as well as the food they ate, so as to ascertain the amount of improvement made in proportion to the food they consumed—the first authentic instance we hear of this being done; and it is from his stock that Bates' Duchess tribe are supposed to have originally descended. The Studley family had also long been famous for the excellence of their Shorthorned cattle, and the Blacketts, at Newby, near Ripon, had their entrance hall, we are told, hung with portraits of their more celebrated animals. In addition to this native stock, we find that a Mr. Michael Dobinson, early in the 18th century, brought over some very superior cattle from Holland, which were of material service in improving the breed of Shorthorns in the North of England, and Sir. Wm. St. Quintin also imported others from the same quarter. It is clear, then, that Colling had good materials to select from, and, in fact, Bates seems to think the Shorthorns were at their best about 1770, and alleges that both Robert and Charles Colling repeatedly admitted to him that the Shorthorns were better before they came into their hands than when they had them. This, perhaps, may be true in regard to their milking properties, for some of the early Shorthorns, as I shall afterwards have occasion to show, seem to have far excelled their modern representatives in this respect, and Bates laid

much stress upon the yield of milk, but in other respects, as flesh producers, the breed, instead of falling off, is generally considered to have much improved. For example, George Culley, writing in 1786, says—"Within a few years, a very rapid improvement has taken place in the breeding of Shorthorned cattle, so that in a few years, I have reason to think, they will surpass their rivals the Longhorns." No doubt this improvement to which he refers was that carried out by Charles Colling. It is to be regretted that accurate data do not exist for enabling us to compare the animals of the present day with those which existed in the last century, or even 50 years ago. And we occasionally hear some judges and practical breeders like Mr. Sanday, asserting that the animals bred at the present day are inferior both in size and quality to those of former times. We want, for comparison, the elements of weight and measure, and have to depend merely upon hearsay and matter of opinion. If correct measurements were recorded of the size of the animals at certain periods of their age, we could at once tell whether those we now produce were equal in magnitude and rate of growth to the races of a former generation. The fineness of bone could also be a subject of accurate measurement. At our national shows there should be committees appointed for the purpose of accurately measuring and noting the features and qualities of the finest animals in the various classes, and let a record of the particulars be inserted in the Journals of the societies. If something of this kind were done we should know what progress takes place, whereas by the present system no certain data are established, and we cannot tell whether our breeds are improving or falling off.

From the fossil remains of oxen, got in the more recent geological deposits, naturalists are of the opinion that at least two species existed in this country before it was inhabited by civilized man—one, a very large kind of ox, called the *Urus*, whose remains are sometimes got in the marl beds and peat mosses of this country, and Julius Cæsar mentions it as occurring in a wild state in the forests of Germany in his day. It seems probable that the Shorthorns and some of the other large breeds, such as the Hereford, are descended from this great wild ox. It is believed to have been domesticated in Switzerland at a very early period, and Lord Tankerville's cattle at Chillingham Park, in Northumberland, are thought by some to be descendants of this species, although much degenerated in size. These half-wild cattle at Chillingham Park are white, with the inside of the ears a reddish-brown, the eyes rimmed with black, muzzle brown, hoofs black, and the horns white tipped with black. According to some old Scottish historians, the wild cattle of the Caledonian forests were white, and furnished with a great mane. Perhaps this may partly account for the great tendency of white to appear in the Shorthorned breed,

notwithstanding the desire of breeders to avoid it. Many of the best early herds of Shorthorns near Ketton were white, with red ears and red spots on their necks, and it used to be remarked that there was a great tendency to white in all those that were bred from closely related blood. The other species of wild ox (called *Bos longifrons* by Prof. Owen) was of much smaller size, had a short body and fine legs, and is believed by Mr. Dawkins to have been domesticated in England at the time the Romans occupied it, and to have supplied food to their legions. Owen supposes that the small Highland and Welsh cattle are derived from this species. Nothing certain is known as to its original color. From the magnitude of the skeletons of the larger species of fossil ox, it would seem that the great size of our Shorthorn and Hereford cattle is not a feature we owe to the progress of modern improvement, but it is an ancient characteristic of the breed.

The main object for which we keep cattle is the production of beef and milk, and the most valuable breeds are those which best fulfill that object. A doubt exists as to the possibility of combining in great perfection both of these qualities. Some advise that we should have separate breeds adapted for each purpose; one for the dairy and the other for the production of butcher's meat; and that it is a mistake to think of getting both advantages united to any great degree in the same animal. Such was the opinion, for example, of George Culley, who thought that where this is attempted, we are likely to get neither in perfection; in proportion as we gain the one we lose the other; the more milk, the less beef; the more beef the less butter. "I am inclined," he says, "to think you cannot unite great milkers with quick feeders. They are two different types of cattle, adapted for different purposes, and we should make our selection according to the particular object we have in view. If we want dairy produce, let us select both bulls and cows from the best milking tribes we can find, and keep to that sort exclusively, breeding on both sides from the families most remarkable for the production of milk, and in due time we shall attain our object. On the other hand, if we want feeding or grazing cattle for the production of butcher's meat, let us select the quickest feeders wherever they can be found; but let us keep to distinct sorts, and don't mix them, for by attempting to unite the two we shall probably spoil both." And Culley points out that the two sorts belong to different types of cattle. "The great milkers are lean-backed, flat-sided, big-bellied, poor, and ill-looking, although kept on good fare. Whereas the others are thick-set, broad-chested, round, and barrel-shaped beasts, light in the paunch, and well-covered on all their points." I have quoted Culley's opinion because he was considered a very good judge,

and a high authority in his day. Although contemporary with Charles Colling, he was an older man by 16 years, being born in 1734. He published his essay on live stock in 1786, so that his remarks were made before the improved Shorthorns came much into notice. Culley was a pupil of Bakewell, who is said to have had a special liking for him, and often took him along in his tours to examine the various breeds of live stock throughout the kingdom; so that he came to be considered Bakewell's favorite disciple; and Robert Colling used to say, that whatever he knew of the art of breeding cattle he owed to George Culley. There is no doubt a great number of the high-bred cattle of the present day are very deficient in milking properties. This is especially the case with those exhibited at our cattle shows, not only among the Shorthorns, but also in the Herefords, Devons, Polled Aberdeenshires, West Highlanders, and Galloways, which would seem to corroborate the opinion of Culley, that the farther we go in improving a breed for the production of beef, the more we spoil it for the dairy. Some, however, dispute the accuracy of this opinion, and maintain the possibility of uniting both advantages in the same race. Thomas Bates was one of these, and as he had a very long experience as a breeder, and is an oracle on the subject, his opinion is entitled to considerable weight. Bates, when a young man, knew Culley very well, as he lived in the same neighborhood, and often visited him, and highly esteemed his judgment in all agricultural matters, although he differed from him on this particular point.

It would seem to be the fact that there were very great diversities among cattle. Some are great milkers, some quick feeders, and bad sorts may be found, which are good for neither purpose. But it seems also to be the case that there are cattle which unite both qualifications to a considerable degree, and that it may be possible to perpetuate these advantages in a single breed. Both qualifications depend upon certain common properties. There must, in each case, be a good appetite for the consumption of food, and great powers of digestion; but in the one case the products of digestion are turned to milk, and in the other to fat and flesh. It is clear enough they cannot go to both at the same time, and a cow that is giving a large quantity of milk will not lay on much beef. But there seems nothing to hinder the production of meat to go on after the secretion of milk is stopped; and when the yield of milk ceases the same animal may fatten quickly, and grow to a great size; its produce, also, may be rapid feeders and good grazing beasts. Facts, however, will perhaps be more to the purpose here than arguments, and as the point is one well worthy of discussion, I shall make no apology for dwelling upon it at some length.

More than seventy years ago, Dr. Anderson, of Monkshill, who was

himself a practical farmer, as well as a man of highly cultivated mind, remarked that some animals had come under his particular observation which not only afforded rich milk in very large quantity in proportion to their size, but possessed the quality of fattening in a very eminent degree. One of these was a cow of his own, which not only gave an unusual quantity of very rich milk, but yielded it for about 11 months in the year. He kept this cow until she was 10 years old, and states that she was at all times in much better condition than the others kept along with her on the same food, and her descendants retained the same quality for several generations, as long indeed as Dr. Anderson kept them. This cow, which was of small size, and of a mixed Kyloe breed, sometimes gave about 7 galls. of milk soon after calving, and when well fed would have averaged about 5 galls. during most of the year. Some of Charles Colling's famous herd of Shorthorns were great milkers. *Old Daisy*, for example, gave 8 galls. a day; and the Cherry tribe, one of his best families, were also good at the pail. *Magdalena* by COMET, was another cow which yielded 8 galls. a day. Colling reserved her for himself when he sold off his stock in 1810, but afterwards parted with her to Whittaker of Burley. Now these are quantities that are seldom exceeded by the best dairy cattle. Mr. Bates informs us that the dam and grand-dam of HUBBACK were both good milkers, and HUBBACK was one of the best sires and quickest feeders ever known. Perhaps the very best tribe of cows Charles Colling had, and which, so far as we can judge, were his own favorites, was that which is known as the "Lady Maynard" family, the first of which he got from John Maynard of Eryholme, in 1786. Robert Colling is reported to have said, that it was to the blood of this family that the great superiority of his brother's cattle and of his own was due. Colling bought this cow when seven years old for £30, with 12s. back of a luck-penny, and he kept her until she was 19 years old, and had bred no less than 20 calves, and was still a fresh-looking cow. She was the dam of PHOENIX, and grand-dam of his bull FAVOURITE, which he used more than any other, keeping him until he was 13 years old. Any one who takes the trouble of looking up the pedigrees of the early Shorthorns will see that FAVOURITE's blood preponderates far more than that of any other animal; so much so, that we may almost say the improved Shorthorn breed are the offspring of FAVOURITE. This is the case, because they all run back to the Colling's stock, which latterly were perfectly saturated with the blood of FAVOURITE. Now John Maynard himself, who sold his fine cow to Charles Colling, told Thomas Bates that he remembered the tribe to which this animal belonged as far back as the year 1750, and that the originals of them were great milkers, the first three in succession having always to be milked before calving. It is true

that of FAVOURITE's blood 50 per cent. was due to the bull called FOLJAMBE, who was grandsire on both sides, which doubtless led Colling, on one occasion, to make the remark that FOLJAMBE was the animal that did him most good. He, however, used FOLJAMBE only one season, and to a very few cows, and sold him when he was but a year old. It would, therefore, seem that he did not think very highly of him, although it is worthy of remark that he should have put him to two of his very best cows. FOLJAMBE himself was out of a fine, neat cow called *Haughton*, an extraordinary milker, but his sire was an inferior animal, which probably induced Colling to part with him so soon. We see, therefore, that FAVOURITE had a good milking pedigree through both lines, and it is clear that Colling resembled Bates in paying much attention to this point, for many of his animals were not only good but extraordinary milkers, and it appears that Charles Colling at first kept cows solely for dairy purposes, and that it was only after he picked up HUBBACK that he turned his attention to the breeding of Shorthorns. The dam of Robert Colling's cow, *Bright Eyes*, gave 15 quarts of milk at a meal, and she produced the bull MÆSKE, a noted sire. Another instance of an extraordinary milker being also a capital breeding animal was a cow called *Barforth*, belonging to Mr. Wastil of Great Burdon, a well-known breeder and noted judge of cattle, and a contemporary of Colling. This *Barforth* is reported to have given 9 galls. of milk a day, yielding at the rate of 24 imperial pounds of butter in the week. She was a well-bred Shorthorn, and dam of Robson's bull, which figures in some of the best early pedigree. A cow of this kind, I suspect, must be a *rara avis* among the Shorthorns of the present day, and it certainly taxes one's credulity to believe some of these statements; but, from the number of independent witnesses, whose testimony seems to be worthy of credit, we are compelled to believe that many of these early Shorthorns were uncommonly fine milkers, instances of 8 galls. a day being mentioned by many persons, and an affidavit was sworn before a magistrate in America that an improved Shorthorn cow imported into that country produced milk that yielded 20 lbs. of butter in the week.

Thomas Bates seemed to have selected his Duchess tribe on account of their combining great milking powers with an aptitude to fatten readily. I believe Bates is generally considered to have been a trustworthy man in his statements, and correct in his facts, although many thought he had an overweening opinion of his own stock. He tells us that his first Duchess cow, which he bought from Charles Colling, gave 7 galls. of milk per day, viz., 14 quarts at each meal, the practice being to milk only twice a day, morning and night, and the milk yielded 18 imperial pounds of butter in the week. He never had a cow that, to his knowledge, gave

more than this. This same cow was the dam of his bull Ketton, a very fine animal, and an excellent sire.

As this Duchess tribe has become so famous, and sells at such enormous prices, I may here give a few particulars regarding them. The first of the family we hear anything of was bought by Charles Colling from the Duke of Northumberland's agent at Stanwick, in 1784, for the modest sum of £13 sterling. She was a massive short-legged cow, of a yellowish red color, with the breast near the ground, had a wide back, and was a great grower. Colling called her *Duchess*, and had often described her to Bates, as a very superior animal, particularly in her handling, and told him that he considered her the best cow he ever saw, but that he never could breed so good a one from her. She was descended from the old stock of Sir Hugh Smythson, of Stanwick. Thomas Bates bought from Colling one of the descendants of this cow in 1804 for 100 gs., being the same I mentioned as being such a fine dairy animal; and he bought another at Colling's sale in 1810. For the latter he paid 183 gs., and styled her *Duchess the First*, and from her all the present family have descended. Bates tells us he was induced to select this tribe from having found that they were great growers, quick feeders, with fine quality of meat, consuming little food in proportion to the progress they made, and also from finding that they were equally remarkable as great milkers. Bates asserted that the tribe improved under his care in regard both to growth, aptitude to fatten, and small consumption of food; but admitted they gave less milk than the first cow of the tribe which he bought from Colling in 1804, although what they did give was richer in butter. I have seen no statement of the actual produce in milk from any of them, except the first one of 1804, and am unable to say to what extent the present Duchesses excel as dairy cows. We may readily allow that Bates improved the breed in regard to form and aptitude to fatten, for several of those he produced, especially after the cross with Belvidere, were remarkably fine animals; and at the first show of the Royal Agricultural Society of England, which took place at Oxford in 1839, he carried off all the prizes in the Shorthorn class except one, for which he had not an animal present. Bates' herd was sold off in 1850, shortly after his death, and the animals were dispersed, and fell into various hands. Some of the best of the Duchess tribe were bought by Lord Ducie, and when that nobleman's herd came to the hammer, in 1853, the Americans carried off several of the choicest at great prices. At the present time, I believe, Colonel Gunter's herd contains the purest representatives of the family in England, and his *Duchess 77th* well maintained the fame of the breed by beating all and sundry at Leeds and elsewhere, carrying off no less than 19 prizes and seven challenge cups; but the Colonel, having expe-

rienced some of the evils resulting from the state of fatness in which it is necessary to bring out the animals at these shows, I believe wisely declines now to exhibit. We see that, although Bates improved the breed in other respects, he admitted that he was unable to keep up the produce of milk to the same degree he got it in his first purchased *Duchess*. Not only could he not improve it, although he paid much attention to this point, as he sold much butter, and reared his calves from the pail, but he allows that the quantity fell off, although the tribe improved in aptitude to fatten. This, then, in so far, is a point in favor of Culley's opinion. But I think it may be accounted for by the close breeding which Bates pursued, and which experience shows has the effect of impairing the yield of milk. Bates had a most exalted opinion of the excellence of his own cattle, but other people did not always coincide with him in thinking them so fine. His father, George Bates, ridiculed his purchase of the *Duchess* at the Ketton sale, and termed her a shabby animal, saying he had many better himself, which his son might have had for nothing. George Coates, editor of the *Herd Book*, also thought she was only "fair"—rather faint praise, it must be allowed, and she seems to have been generally considered inferior to the *Duchess* he previously purchased in 1804. The fact is that Bates had his own notions as to what constituted a good animal, and he often railed at the decisions of the judges at our national shows when they didn't coincide with his own views.

By following Sir Hugh Smythson's system of periodically weighing the food he gave his animals, and ascertaining what increase they made upon it, (a plan he followed for 17 years), he educated himself into a knowledge of what really were the best sort of beasts, and he recommends every one to examine their stock by this criterion, for it was in this way, he tells us, that he was led to perceive the great difference that exists in the various kinds of cattle, and to know the external character which indicated their real merits. Bates laid much value on the milking property, and on the style, quality of hair, and handling. Good form did not in his estimation compensate for defects in these points. He was a very different man from Charles Colling, who seems to have been a very reserved character, but a consummate judge of cattle. Colling kept his eyes open and his mouth shut, and seems to have invariably declined throwing any light upon his proceedings. His chief object in breeding cattle seems to have been to make money, whereas Bates was full of enthusiasm on the subject, ready to impart his knowledge, and fond of impressing on others his own peculiar notions as to what constituted the points of a good animal. He firmly believed that he had the best tribe of cattle in the world, and wished to have them adopted everywhere for the good of the nation and mankind at large. When he thought a good use would be made of

them, he was sometimes very liberal in disposing of his beasts, but where he thought the intending purchasers would cross them with inferior tribes, and thereby spoil the breed, and bring his stock into disrepute, he would occasionally refuse to sell at any price. Bates, as I have already mentioned, said that Colling told him that the first cow of the *Duchess* tribe which he bought from the Duke of Northumberland's agent at Stanwick was the best he ever saw, and that he could never rear so good a one from her. Whether it was owing to this that her produce turned out so much worse than herself, or for some other reason, it is clear that Colling did not cultivate the breed to any great extent, and on this account it seems to me difficult to believe that he thought so very much of them. On looking over his sale catalogue, we find only two animals of the *Duchess* blood in it, one of them a two-year-old heifer, and the other a yearling bull. None of the older breeding stock seems to have contained any of the blood, and it does not appear that Charles Colling ever used a bull of the *Duchess* blood. Now, as his first purchase of the tribe was in 1784, and his sale in 1810, he had twenty-six years' experience of their qualities, and ample time to have propagated them in larger number if he had thought it for his advantage to do so. Most of the animals at his sale were descendants of the "Lady Maynard" tribe, and I think we must from this infer the *Duchesses* were not his favorites, or he certainly would have had more of them. On returning to the sale catalogue of his brother Robert, who was only second to Charles as breeder, and who did not sell off his stock until 1818, we look in vain for any trace of the *Duchess* blood; and as the two brothers acted very much in concert, we have here another proof that it was not the tribe they thought most of. All Bates' *Duchesses* trace back to what he called *Duchess 1st*, which was the cow he purchased at the Ketton sale in 1810. Now, when we examine her pedigree, we find that 75 per cent. of her blood belongs to Colling's well known bull Favorite, and little more than three per cent. to the original "Duchess" element. Even taking Bates' first cow of the tribe, which he bought in 1804, we find that her sire and dam were both by Favorite; and her own calf, Ketton, was also by Favorite. This shows how strongly the blood of Favorite was infused into the best Shorthorns of those days. As we trace the "Duchess" tribe downwards, we find the blood derived from the Stanwick cow dwindling rapidly to so fine a fraction that we can hardly appreciate it, being drowned out by other strains, in all of which the blood of Favorite preponderates. So that if any confidence is to be placed in the recorded pedigrees, the excellence of even the earlier individuals of Bates' herd must be attributed to the influence of Favorite far more than any other animal; and it would seem almost absurd to assign

any appreciable effect to the infinitesimal quantity of the original Stanwick blood now remaining. Although the family soon became Duchesses only in name, yet they continued to be animals of very select blood, for Bates was very particular in regard to pedigree, and took good care to use none but well-bred sires of the choicest families. Of all the sires he used, Ketton 1st had most of the original Duchess blood, and yet it amounted to only $12\frac{1}{2}$ per cent., 75 per cent. belonging to Favorite; for Ketton as we have already seen, was not only got by Favorite, but his grandsire and grand-dam were so too, which shows to what an extent in-and-in breeding was sometimes carried in those days.

Bates had another sort which he held out as an example of the combination of great milking and feeding properties. These were the progenitors of his Oxford tribe. *Matchem*, his first cow of this family, he tells us, never gave less than 12 quarts of milk at a meal, when on the grass after she had dropped her calf. She was the dam of an excellent cow, which Bates called *Oxford Premium*, because she carried the 1st prize at the Royal Agricultural Society's show at Oxford in 1839. She also gained the highest premium at the Yorkshire Society's show in the year following. This *Oxford Premium* was also a good dairy beast, often giving milk the whole year round, without being put dry for calving. I have dwelt at some length on Bates and his herd, as these two tribes of his—the Duchess and the Oxford—have been more run after than any races in existence. Our American cousins are generally reckoned an acute and enterprising race, with a good judgment in the practical affairs of life. It was their bid of 700 gs. for *Duchess 66th*, at Lord Ducie's sale, that first opened the eyes of the British public to the value of Bates' blood in the market. The present rage for animals of fashionable pedigree, and the extravagant prices of late given for the so-called grand Dukes and Duchesses, remind us of the Tulip mania in Holland, which happened more than two centuries ago. The Dutchman, solid and phlegmatic as he is usually reckoned, yet, on that occasion, showed he had a fine vein of enthusiasm in him, and the passion for these interesting plants became so strong that nothing else seemed to the Dutchman worth living for. High and low were carried away by it. Not only speculative merchants, but steady farmers, and men of all classes, from the nobleman to the chimney-sweep. Single bulbs sold for 2,000 florins, just as we see an innocent calf now sell for 1,000 gs.; and there were fashionable strains of Tulips in those days, just as there are Shorthorns now. One sort called *Semper Augustus*, seemed so enviable, that a man offered for a single root of it no less than 4,600 florins, together with a new carriage and a pair of horses, with harness complete. Another madman agreed to give 12 acres

of land for a root, and a gambling in Tulips became for a time a consuming passion, just as gambling in railway scrip was many years ago in this country. Who knows, therefore, but we may see a further development of this excitement regarding pedigree Shorthorns? for enthusiasm, once awakened, is catching, and no one can tell how far a Briton may go for a Shorthorn, when we see to what length the Dutchman went in his passion for Tulips. Pedigree is no doubt all very well, but a long pedigree on paper is not always a good one in fact. Many of these fashionably-bred animals are notoriously bad beasts; they have in many cases been bred so long without proper judgment, and from nearly related blood, that vigor of constitution seems to have been irretrievably lost. They have become ewe-necked, weazel-waisted, leggy, and consumptive, can't stand bad weather, and give little milk; and, doubtless, there are occasional flaws in the pedigree that don't appear in the *Herd Book*, or in the sale catalogues. Our improved races of domestic animals have attained their high degree of excellence by being bred from carefully selected animals, with a constant weeding out of the bad ones, and it is only in this way that they can be kept up; but to do this requires a degree of judgment and perseverance that few possess. It is men like Charles Colling, Thomas Bates and Richard Booth, that have made our cattle what they are, and it is by men of a similar stamp that we may expect to see them further improved, or even kept from deteriorating.

Probably no herds of cattle have turned out such a number of first-class animals as those of Warlaby and Killerby. The Booth family have been noted breeders of Shorthorns for three generations. The herd was founded in the days of Colling by Thomas Booth, who then owned the Warlaby and Killerby estates. He was succeeded by his sons, Richard and John, of whom the former established himself at Warlaby and the latter at Killerby. Although both are now dead, yet the family happily still survives in the descendants of the latter. The animals bred by the Booths have been noted for their fine forms, massiveness, and heavy flesh. It may, therefore, be worth inquiring whether, in a race of cattle so distinguished for substance and feeding quality, we can find instances of these characteristics being united to good milking powers. Now, according to Mr. Carr, this happened in a number of cases; but, as he does not give the actual measurement of the quantity of milk yielded by any of them, there is a looseness about the statements which I am unable to rectify. Some of the original stock of old Thomas Booth are said to have been good dairy cows, and great grazers when dry; and the first of Richard Booth's Isabella tribe was a cow he bought in Darlington market, which gave brimming pails of milk, and, nevertheless, had a remarkably

ample development of the fore-quarter, an unusual feature in a good milker. *Mantolini*, a celebrated prize-winner, and the ancestor of a fine family of Shorthorns, is said to have been an excellent dairy cow, and so was *Toy*, dam of the famous twins, *Necklace* and *Bracelet*. Among others of the same characters, I may mention *Bliss*, the first of the tribe which goes by that name. She was a very heavy milker, and so was her daughter, *Blithe*, the latter being known to produce two or three calves in successive years without ever going dry. She again was dam of *Lady Blithe*, who has produced more first-rate animals than almost any other cow in recent times, but had no show-yard pretensions herself, being just a well-bred dairy cow. *Satin* was another, all a dairyman could desire, giving great quantities of rich milk, suckling two calves, and required milking after them. *Princess Elizabeth* by CROWN PRINCE, combined milking and grazing qualities in a very unusual degree, and produced *Queen of the Isles*, a 1st prize-winner at Chester. *Caroline* by FITZ LEONARD, we are told, was a prodigious milker, giving four pailfuls of milk in the day. *Camp Follower* was also an extreme milker, and died of milk fever, yet showed as a very fine cow, and produced some first-rate stock. Indeed, some of the admirers of the Booth blood go to the length of asserting that all the Warlabby tribes were famous for possessing more than ordinary milking powers.

These examples may suffice to show the possibility of uniting in a considerable degree the two desirable properties of giving much milk and fattening well, and I may further mention that Mr. Whitaker of Burley, and Mr. Wilkinson of Lenton, who both bred many excellent Shorthorns, kept their herds expressly for dairy purposes. Mr. Youatt and the Rev. Henry Berry also agreed in thinking it quite practicable to combine good milking and feeding qualities in the same animal. Mr. Berry had experience of it in his own herd; while Youatt says that many of the cows in the London dairies are as fine specimens of the improved Shorthorn as one could wish to see. It is evident that it would be very desirable to have a breed in which this combination of advantages could be secured, for a race of cattle where the cows scarcely give milk enough to bring up one calf properly must be reared at a great disadvantage, and however excellent they may be as grazing or fattening beasts after they do grow up, yet the cost of rearing the calves during the first year is too great, since it may be said to involve the whole expense of keeping the cow for a twelvemonth. On the other hand, in a dairy breed, where the animals are neither good growers nor quick feeders, the steers are unprofitable beasts, and the cows, when past use for the dairy, cannot be profitably fattened. Our Aberdeenshire farmers must have something that will feed

well, come to the dairy what will—something that will be prime Scots in the London market. They like to see big fat oxen, heavy animals, round as a hoghead. They don't trouble themselves with your stones of 8 lb. or 14 lb., but always reckon their animals by the hundred-weight. This taste for fat beasts has certainly led to the deterioration of the cattle as milk producers, and I rather suspect the Aberdeensian in general would agree with Culley in his opinion that first-rate feeders are not to be had from a dairy breed. The fashion of judging at the local and national shows has also tended in the same direction. Round, well-fed animals always look so much better than leaner ones, that nothing has any chance of a prize unless it be fat; and the fatter you can make it, so much better is its chance. Exhibitors are, therefore, obliged to conform to the fashion, and good feeding and skillful training are half the battle. This, however, is ruinous to the animals for breeding purposes; and many of the best ones are spoiled in this way every year. But breeders say they can't help it; they must keep up the character of their herds by exhibiting at these shows, and taking prizes—otherwise they would lose ground. The evil, it seems to me, might be remedied to some extent by a more careful selection of judges. If possible, men should be got for the purpose who are themselves eminent as breeders, and can distinguish the value of an animal in a lean state, even when pitted against one that is much fatter. If the judges also were selected by the breeders and not by committees, composed often of people who have little experience in that line, perhaps a better mode of judging might be gradually established at our national shows. Valuable prizes should also be given in the proper classes for animals uniting fine symmetry with good dairy qualifications. If the breeders of Shorthorns and other races of cattle would also afford some information in their printed catalogues, as to the milking pedigree of the animals they offer for sale, I think that they would soon find that their customers would appreciate it, and that animals well-come in this respect would be looked after, and would fetch high prices at their sales. At present it is difficult ascertaining anything in regard to this point.

The Ayrshire is the type of a dairy animal, and it is very proper that those who rear them should make the development of their milking powers their main object. Let them go as far in this direction as they can, so that we may see what sort of animal will emerge from the continued cultivation of this special feature. The origin of the Ayrshire breed is not very exactly known. It seems to have risen by a process of selection made with a view to the production of milk and hardiness of constitution, without much regard to anything else. Very likely there has been a mixture of various elements; for we learn that there were

importations of Durham cattle by the Earl of Marchmont, in 1750, and of Dutch cows by Mr. Dunlop of Dunlop, about the year 1760. There has probably also been an infusion of the Alderney, or breed of the Channel Islands; for Quayle, who wrote the *Agricultural Survey of Jersey*, states that the Ayrshire was a cross between the Shorthorn and the Alderney; while Colonel Le Couteur informs us that General Andrew Gordon, when Governor of Jersey about the end of last century, sent some of the best cattle to Scotland. A veterinary book, published at Glasgow in 1794, likewise states that the Dunlop cows, which were considered the best milkers, had been produced by crossing the native cows with bulls brought from the Island of Alderney. The general resemblance of the Ayrshire and Alderney cattle has been noticed by Professor Low and Colonel Le Couteur. Youatt, however, seems to think that the Ayrshire breed has originated from a cross of the Holderness with the Highlander; the former giving the milking properties, and the latter the hardiness of constitution and small size. The prevailing color of the Ayrshires is red and white in various mixtures. Sometimes they are wholly red, but I believe never wholly white, which is rather curious, for in the Shorthorn, which is also red and white in all proportions, pure white animals are constantly occurring, as if there were an innate tendency to that color. As Mr. Caird has remarked, the great demand for dairy produce has in a great measure made the Ayrshire breed. It has been developed from a variety of different elements by a process of selection. The great mining and manufacturing population of the district in which the breed is located has given rise to a constant demand for milk and butter, and the climate and soil being both favorable for cow-feeding, there was a strong inducement to cultivate dairy farming, and to select such animals as were most noted for giving milk. We see that there were importations of Dutch, Alderney and Durham cattle—all good dairy breeds. We may be sure that the best milking cows were retained, and the worst ones got rid of as soon as possible. The necessity for acquiring good cows would sharpen the powers of observation in regard to what constituted the outward signs of a milk producer, and thus the judgment would be educated as to the points to be looked for. Carry on this process for generations, and you have the result. Just as the dense manufacturing population of Lancashire and Yorkshire has developed the Holderness breed, so has the great seat of Scotch manufactures developed the Ayrshire. The Yorkshire dairy cow is just an Ayrshire on a large scale. All the essential points of the animal are similar. The fine neck, light fore-quarter, deep rib, thin skin, lean back, good udder—even the color is very much the same, but there is considerable difference in size. These dairy breeds, and, in fact, most great milking animals, are

distinguished by having a lightness of fore-quarter, a sharpness at the top of the shoulder, with rather a small girth round the heart, and a general leanness along the back. Now these features are disapproved of in a feeding animal, and the question is, can we get rid of these features without damage to the milk? can we get a right development of the fore-quarter and a good girth round the heart in a first-rate dairy cow, or are the two things incompatible? I think the evidence I have adduced in the course of this lecture is sufficient to encourage us to attempt it, and to make us hope that we shall eventually succeed in uniting good feeding and growing properties with first-rate qualifications for the dairy.

PLAN FOR A SMALL SUBURBAN OR COUNTRY TOWN PLACE OF 100 BY 250 FEET.

FIGURE A.

BY F. R. ELLIOTT,
Landscape Gardener, Cleveland, Ohio.

In preparing this plan I have entered more into detail of preparation than usual, and for the reason that I desire it to be of practical use and benefit.

I have located this place upon the north side of an east and west road or street, but it may also answer equally well on the east side of a north and south road; it is designed for a lot one hundred feet front by two hundred and fifty feet in depth.

The surface of the ground is supposed to be nearly level, and the house to be built (the ground plan only of which is shown) to be thirty feet wide, one and a half or two stories high, with small wings, as shown in the ground plan, and to cost from fifteen hundred to twenty-five hundred dollars, according to the finish of the workmanship and the material employed in its construction.

The character of the soil in the first preparing of the grounds for building, is not material, so long as drainage is secured. The first thing to be done is to mark out the site for the house, next extend that line all around twenty feet; then remove all the top soil within that line; mark out the pathways, and remove all the top soil or good earth in them; take all this top soil and stack it in a pile, where, at any time during the period of building, there can be added to it more or less of soil, or an occasional load of manure or ashes, etc.

If the soil is clayey, then, after having removed the top soil from the pathways, excavate the clay toward the center in form of a V, and so that the center of the path be about eighteen inches deep. In digging the cellar, let all the earth therefrom be thrown within the twenty feet space surrounding; but should the laborer, at any time in digging, strike coarse gravel or small stones, have them at once wheeled into the path-

ways and so laid as to form a perfect drainage, leading from the house to the street. Again, should there be any large boulders or other rough stone in the cellar digging, have them wheeled away into a pile by themselves. It is less trouble and expense to do these last two items when the work of digging the cellar is going on, than to have afterwards to pick them out of the mass.

The earth from the cellar is supposed to be just about enough when spread over the twenty feet above named, to raise a gentle slope from, and nearly level with, the rough underpinning of the house, and is, therefore, disposed of and made valuable in the way of conducting water from the walls.

With the house built, the next work is to prepare the ground for future use and enjoyment. If the soil is new, never having been cultivated and pretty rich, it may not need manure; but if it has been a part of some old cultivated field, then it should have a heavy dressing of thoroughly rotted barn-yard manure, and be either deeply plowed, say eight or more inches, or spaded the depth of the spade, and then, before being raked down smooth, have sown a top dressing of two bushels of salt, two bushels of bone meal and one-half bushel of gypsum (land plaster); after which, rake first from the outside toward the paths; raking heavily from the extreme outside, and lighter as the paths are approached; this tends to make the grade a little rounded or rolling toward the center, and, when the whole is finished, adds much to the appearance. Let the second raking be lightly done, raking from the paths and carefully throwing out every stone and burying every chip, breaking every clod, etc., as the work goes on. If the soil is clayey, the filling or returning of the cellar earth around the house should be thoroughly loosened by digging before covering it with the soil which has been reserved in a heap, and was or should have been taken from the ground before excavating for the cellar. In this filling of soil around the house, be careful to remove any chips, stones, shavings, mortar, etc., that may have been thrown there; and in applying the soil calculate for its settling, say one inch for every six inches that has been removed and again filled in. Calculate for the top of the good soil, when settled, to be about one inch above the lower line of the lower dressed stone or pointed brick that forms the underpinning, and rake down carefully all the time, studying for the water to flow over the surface from the house.

The next work is the making or forming of the paths, after lining them out; to dig the good soil and remove it by itself, then dig the subsoil so that the center of path is about one foot or eighteen inches deep, sloping upward each way to the turf. Into the center of this pathway, cart all

old broken bricks, rough stones, etc., for the purpose of forming a drainage and rendering the after structure less susceptible to frost.

If gravel is near at hand, the labor of filling in and forming is a small item; but as each barrow full is dumped, rake the coarsest of it down to the center, keeping the finest on top, and forming the path a little rounding, with its outer edges level with the adjacent soil, and its center two inches higher. Should the gravel not pack well—after two or three months of exposure to rains—then spread over it half an inch deep of wood ashes, and hoe and rake the same into the surface; finishing, if convenient, by rolling. The rolling is not a necessity, only an advance assistant, of time, in the work of packing. If gravel cannot be had and clay only is available for the paths, then, after filling the center with large stones, old bricks, etc., for the purpose of drainage, spread on the clay, and then for every four inches deep of clay mix two inches of half sand and half coal ashes, and with hoe and rake thoroughly intermingle it. This will make a firm and nearly dry path at all times, except when the frost is coming out of the ground.

The next work is preparing for the beds of flowers, and for the position of trees and shrubs. Having the plan in hand, it is not necessary that all should be done the first year, but if want of time or means to do all be unavailable, then select the one bed of flowers, and the position for such trees as you design to plant, keeping the plan in hand for next year's work to completion. It is not absolutely necessary, that the soil in the flower beds be deeper than ordinary good ground—say soil of six to eight inches deep, but it is better that the ground should be dug at least twenty inches; and if good soil is readily available, it is economy to exchange the poor for the good. If the soil is naturally of a stiff clayey nature, then sandy loam should be the material to take the place of the poor clay removed. On the other hand, if the soil is sandy, then exchange the yellow poor sand for good heavy clay, dry and thoroughly mix together. It is better to make these exchanges and intermingling of clay and sandy soils, than to attempt to make a rich soil by means of barn-yard manure.

The seeding to grass for the purpose of a lawn is perhaps the next work in order, and yet when it can be done we prefer leaving the seeding of the lawn until after all the trees and shrubs have been planted, because we thus avoid having to tread upon the ground after its last raking. The most of landscape gardeners use from four to six bushels of seed to the acre, because the thicker the seed the finer will be the grass and the more durable; inasmuch as, when thin, its roots are mainly on the surface, while if thick it necessarily has to depend upon its lower or top

roots, and although when well established the grass of a lawn thickly seeded does not grow as rapidly, yet its roots being deeper it keeps a fresher and greener character in time of drought. This seeding for a lawn may be done in September, and in some seasons into October, or it may be done any time in early spring when the surface of the ground is sufficiently thawed to admit of the rake passing over the ground. It is not, however, advisable to sow after the month of April.

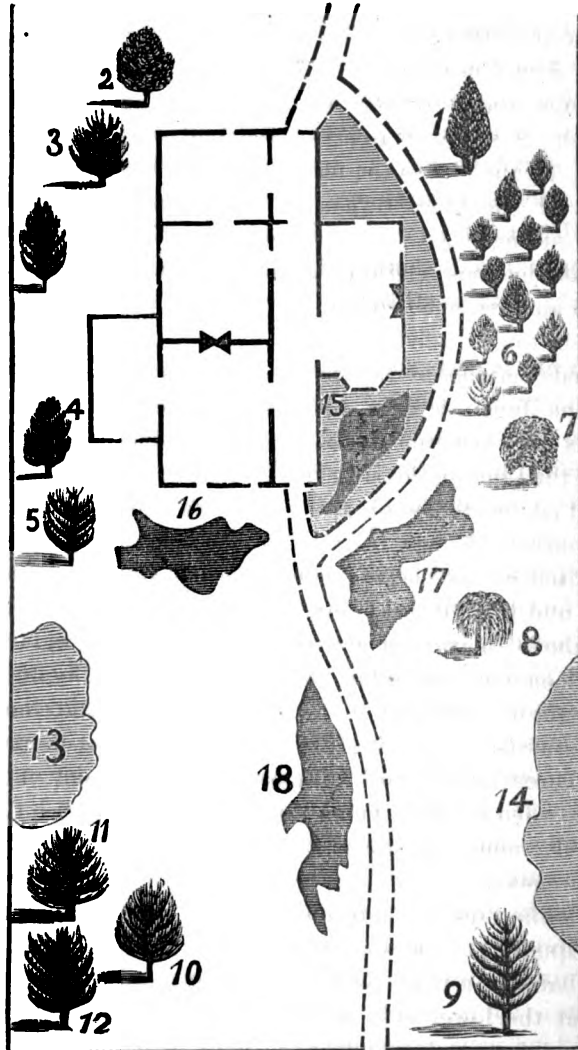


FIG. A. SCALE, 33 FEET TO THE INCH.

In this plan only the grounds reaching to the rear of the house have been considered, and the balance of lot rear of house, it is supposed, may

be occupied with cherry, peach, raspberry, strawberry, grape, asparagus, pie plant and vegetables generally.

Our figure No. 1 is the place of a Scotch larch ; No. 2 is a white pine ; 3,3, Norway spruces ; 4, Austrian pine. These rear trees are placed to break the cold north winds, and also to become, when fully grown, background settings to the house, as is the frame to a picture. 5 is the European or sycamore maple, but the tulip tree, white mulberry, horse-chestnut, linden, or any other stately broad foliaged tree would do as well ; 6 is a dozen of dwarf pear trees of sorts ; 7, mountain ash or magnolia soulangeae, osage orange or persimmon ; 8, weeping cut leaved birch, or weeping beech ; 9, scarlet maple ; 10, red bud or Judas tree ; 11, soft or silver maple ; 12, elm ; 13 is the form of a mass of flowering shrubs, composed mainly of the lilacs, Japan quince, purple fringe, wigelias, tree honeysuckles, syringes, &c. ; 14 is a bed or form of such flowering shrubs as the spireas, deutzias, clethras, dwarf flowering almonds, etc. These to be selected and arranged so that the tallest growing may be in the rear, and smallest in toward the lawn.

Or these beds may be used quite as satisfactorily and showily by planting the ricinus Japanese corn, carmas, dahlias, hollyhocks, &c., as the back grounds and bringing forward with amaranthus, perilla, zinnias, peonias, etc., then toning down in front with perhaps some balsams with petunias, and edging the whole front line with white candytuft.

The bed marked 15, just in front of the wing with its bay window, should be raised on the back center line nearly eighteen inches, and then roll forward and toward the point, so that there the center will be about four inches above the turf or ground line. The forming this bed with rocks, using common, irregular blocks, and slabs of building stone, if boulders are not at command, will add very much to the character of the bed, and also assist in keeping the earth moist and cool for the roots of the plant. Throw in the rocks almost hap-hazard, and yet with an eye to the center, when finished, being the highest point. See that good soil is well settled among the stones and then commence the planting. We can make changes of course from year to year, of most of the plants that we use, and while now we note one class for this position, another may perhaps be equally as good and effective, provided the planter studies the growth and habit of a plant before placing it in position. But now, suppose we plant the lower edge of the back point, *i. e.*, that next the window, and three feet each way from it, with perennial peas of varieties, placing the roots along within six inches of the outside edge. And inside, back one foot from the peas, plant Sweet Williams, then put in lilies, using the auratum next to the Sweet Williams, then the rubrum, roseum,

album-longiflorum, and so on with lilies all through the center of the bed, filling it to within one foot of the front edge, four feet back from the point toward the front path, and two feet back of the point toward the wing. It matters not for these lilies whether our construction be rock work or all soil, although amid the rocks the bulbs will do better than in the plain ground. Next outside the lilies, all around, plant petunias, or other running plants, where roots shall not interfere with the bulbs, but whose vines and flowers shall creep in among the stems of the lilies, and if there are rocks, over and among them. Next have a moss two foot wide by three long in the center of the point toward the front path—made of the dwarf marigold, (*Tagetes signata pumila*,) and then finish the bed with a border of Phlox Drummondii.

The bed marked 16 is, in rough dimensions, about twelve by twenty feet, is supposed to have full exposure of sun, with increased heat by means of reflection from the house, and the plants must therefore be studied as regards their endurance of the position.

Fuschias, or Hybrid Perpetual Roses, would be of little avail here, and Rhododendrons would not live here a year, but with a little expense we can make this bed a mass of beauty from April to November. Into its center therefore, we first plant a half dozen of Tritomas, placing them about one foot apart and in the form of a cross, or a heart, or a star, as fancy pleases. Then we sow seeds of poppies among these Tritomas, and thin them out by and by, taking care to sow the seed of the smallest flowering kinds on the outside. Their show will be magnificent. On the outside of the poppies plant a dozen, or more, of the different asters, placing them in such position that as they come into flower, the contour of the bed shall be kept inviolate, but in no place have the aster nearer than two and a half feet from the outer line. The distance apart of the asters in this place should be one foot, for the small or dwarf growers, and bloomers, and two feet for the larger ones. Finish up this bed with verbenas, so planting and arranging that those with dark maroon, crimson or scarlet flowers shall be in the center, while the stripes and pinks take the next outer line, and the whites and light bluish colors take the outside line. Many will not perhaps like this systematic arrangement of colors, and we confess it is not to our taste, but it is just now popular. We profess to grow our verbenas from seed, because in so doing we get better plants, more vigorous, and if we have good seed, nine out of ten of them will give us better flowers than any named varieties that we can buy. Then when we grow from seed and plant hap-hazard or without knowledge of colors, when our plants come into bloom we find they themselves have arranged their colors so that, look at them which way we will,

whether from the path, the lawn, or the windows of the house, we have always a delicate harmony; and if we take the time to study it, we find we have half a dozen or more beautiful figures in the bed, with more of grace and truthful embodiment of light and shade, of color and refulgence, than we had ever conceived. In this bed plant also bulbs, tulips, hyacinths, &c., placing the bulbs a foot or more apart, and thus get a beauty of bloom all the spring until the time for the other plants to occupy the ground, which they can do without injury to the bulbs.

Bed 17 measures roughly eight by twenty-four feet, and in this try to arrange most of the beautiful varieties of not too tall habit in growth. You cannot put in everything, nor do you care to; for, as we have before said, there are others perhaps equally as good as these we now name, and they may be grown another season, and so a new feature given to the place. But plant a line in the center of this bed, curved something after its form, with the different varieties of tall growing Coxcombs—*Celoria*; then just back of that line, away from the path, plant a row of Mourning Bride—*Scabiosa*; and then next one or two rows of *Centaurea*, Bachelor's Buttons, Sweet Sutton, etc.; next back of these a row of *Nemophylla*; and then finish out the points with *Gillia*, Sweet Alyssum, and some of the delicate ornamental grasses, such as the *Brizas*, *Briropysum*, *Carix*, *Chloris*, etc., of small or low growths.

Turn, now, to the path front, and on the line next the Coxcombs, plant a row of Scarlet Salvias; then a row of *Ageratums* and *Cleomes*; then rows or clusters of *Dianthus* in varieties; and fill out the points and edge lines with *Mignonnette* and *Portulacca*, with occasional little masses of *Pansies*.

Bed 18 is somewhere near thirty feet long, and varying from one to eight feet wide, and, like the others, is irregular and fanciful in form, with its border of green turf of the lawn all around. The whole arrangement of these beds has been to break up and make irregular and broken, yet curved, graceful lines; while at the same time considerable extent of lawn or grass plat is preserved, and still further to assist the views over the grounds, whether passing along the pathway, looking from the street or the house, and carrying the eye over a great apparent extent of bloom.

Bed 18, plant mainly with bold and showy varieties; put in a couple of *Ricinus* in the center, with a stalk each way of Japanese striped corn; then a couple or more of *Cannas*; then some hollyhocks; then *Hibiscus*; then *Lychnis*; and then on the side or end toward the street use the everlasting flowers, *Gamphrenas*, *Helichrysums*, *Rhodanthes*, etc., and fill each point with a different color and variety of the dwarf *Tropeolums*, which, as they grow, should be pegged down into position, and by so doing in-

crease the number of flowers. On that part and point toward the house there is room next the Cannas for some half dozen or more hybrid perpetual roses, and on the point into the lawn room for two or three scarlet geraniums; then toward the house point, next the hybrid perpetual roses, plant half a dozen Bourbon roses, and then next a half dozen of Tea roses, and then finish the point with Phlox Drummondi, verbenas, or other low-growing, free-flowering plants.

To change this plan for a carriage way to a barn in the rear, all required will be to widen the path, rounding it so as to take off the point, toward the path, in bed 17.

BREEDING AND FEEDING OF STOCK.

BY MR. W. SANDAY.*

The breeding and feeding of first-class stock having of late years attracted much attention, and being a pursuit on which I have been myself engaged for the greater part of my life, I felt that the result of my experience might be of use to others, and therefore I acceded to your request to read a paper on the subject. I have endeavored to make my remarks as practical as possible, as I have not come across any article on the subject which can be said to be of any practical use. Breeding, as the more important of the two subjects under consideration, should first claim our attention. Shorthorns, on account of their early maturity, having become more popular in this country than any other breed of cattle, I shall confine my remarks to them; the same observations will, of course, apply with equal force to any other variety. To give some idea of the increase in the number of Shorthorn breeders within the last twenty years, I may mention that in the year 1850 there were 316 subscribers to Coates's Herd Book, and the pedigrees of 1,127 bulls entered; to the last volume we find 655 subscribers, with the pedigrees of 2,366 bulls. I would ask whether, in the opinion of this meeting, the number of really first-class animals has increased in proportion?

BREEDING FROM FASHIONABLE STOCK.

My own opinion is that the animals bred at the present day are inferior in size and quality to those bred twenty or thirty years ago. Now, if this be the case, surely there must be something wrong in the present system of breeding. It is evident that but little common sense can have been brought to bear on the subject. I am convinced that the cause of this deterioration is the principle on which most herds are raised, viz., the fashion—or rather infatuation—of collecting from certain families without any regard to the qualifications necessary for producing and for perpetuating good animals. To follow out this plan, in-breeding must, to a very great extent, be resorted to, and the number of families on which such an

* Paper read before the Nottingham Chamber of Agriculture.

experiment can be tried with the smallest chance of success is so limited that in the majority of cases the consequences cannot fail to be ruinous. We all know the difficulty of raising and keeping up a good herd or flock; this can only be done by breeding from the very best males and females, but the present system seems to set this rule completely at defiance; if an animal be only of the fashionable strain, it is sure to make a fabulous price, whatever its quality. Only last year two heifers were sold by Captain Gunter to a Canadian gentleman for £2,500, and their produce, two heifer calves, has since been purchased by Lord Dunmore for the same sum, (£2,500.) Should these calves breed, what price do you think Lord Dunmore will set upon their progeny? Of course it will be a high one, totally irrespective of their quality; should a bull be reared, doubtless he will be used, no matter what he may turn out. I have, of course, put this as an extreme case; but similar ones are constantly occurring, and this servile adoration of pedigree cannot fail to end in a disappointment, and ultimately in the deterioration of Shorthorns. We may have some idea of the extent of the evil if we take the number of bulls annually exhibited at our various shows, and consider how few of them are really fit to perpetuate their species, and yet the majority of them are so used, which would in some measure account for the great scarcity of good animals. With many, a *long* pedigree is all that is considered necessary; but unless this pedigree be composed of really good animals the produce will probably be unsatisfactory. A well-descended bull or ram may, although not itself first-rate, produce first-rate stock; numbers of such instances have come within my own knowledge. The case is far different when the sire comes of light-fleshed, delicate animals, (and these, I am sorry to say, are in the present day only too numerous.) Surely any of us may foresee the end of such an irrational plan, and yet it is pursued, as I have already stated, by numbers of breeders.

THE MANNER OF REARING CALVES—SELECTING SIRE.

There are two other causes which, in my opinion, must hasten the deterioration of many of our best herds, viz., 1, the artificial manner of rearing calves; and 2, the practice of using bulls before they arrive at maturity. 1. The artificial manner of rearing calves, especially bull calves. They are confined in small stalls or loose boxes, instead of being allowed to suck upon their mothers in the open pastures, where they could take any amount of the exercise so necessary to their muscular development. I am well aware of the difficulty of carrying out this plan to any great extent, but whenever practicable it should be adopted, if really first-class animals are to be produced. 2. The practice of using bulls long before

they come to maturity. It will be sufficiently evident to every one that such a practice cannot fail to be injurious, and, though instances to the contrary may be adduced, they are only the exceptions which prove the rule. I am also quite of opinion that over-feeding is another cause of deterioration; but it is not likely to be discontinued at present, as, owing to the extreme difficulty of judging animals when out of condition, there are but few who will purchase them. I am well aware of the scarcity of first-rate sires, and never in the history of Shorthorns have they realized such enormous prices; but had the supply increased in proportion with the number of breeders, no such difficulty would have arisen. One advantage, however, has been gained. There is no lack of useful bulls, which may be purchased at moderate prices, and these, we may fairly congratulate ourselves, have much improved the ordinary stock of the country, especially in Ireland, as may be seen by the superior quality of the cattle brought to our fairs and markets. Here I may perhaps be allowed to make a few remarks on the selection of this description of stock. In the first place, it should always be remembered that the male has a greater influence on the quality of the stock than the female; consequently, every female put to a good male will probably produce a better animal than herself; this rule applies to all ordinary stock put to a well-bred sire. Therefore, never spare a few pounds in the purchase of a good animal, for you may reasonably expect a handsome return for the amount expended in the improved quality of the stock. Secondly, with regard to the selection, the importance of which I think you will admit, I would most strongly recommend you to fix upon a flock or herd known to be descended from a long line of heavy-fleshed and robust animals, and one whose owner has a character for careful selection of his breeding stock. Carefully avoid, however, herds bred from the light-fleshed, narrow, and delicate animals so common at the present day. In purchasing a bull for ordinary use, above all things choose a fair-sized animal, with good quality of flesh; if well descended, do not be too particular about his form. The shoulders are better well open at the top, not narrow like the withers of a horse, no matter if a little coarse, if it is a sign of constitution; the ribs should be well sprung, a most important point, but difficult to get; the hips large, even though they should be coarse; the head and neck masculine, and the horns rather thick than otherwise—a thick horn is a sign of robustness and vigor. I do not like the thin, papery hide which so many admire; you may be sure there is not much flesh under it.

ADVICE TO BREEDERS—IN-BREEDING.

As there may be some amongst my hearers who are breeders of first class shorthorns, a few words of advice to them may not be out of place,

though it must be understood that they do not in any way extend to those who we may term "pedigree breeders." With them I have no sympathy; and though I am bound to admit that large sums of money may be and are realized by this mode of breeding, that its effects are injurious must be apparent to every unprejudiced person. What I have said in my advice to farmers, will apply here, only, if possible, with tenfold force—viz., avoid any tendency to light flesh or delicacy of constitution. A cross of this kind is often attended with most disastrous results; a case in point occurred some years ago in the herd of the late Mr. Richard Booth, whose name is doubtless well known to most of you. He had for many years been breeding entirely from his own stocks, and thinking that a cross was beneficial, he was induced to purchase, at one of the sales of the late Earl Spencer, a bull called "Exquisite." Earl Spencer's herd, though neat in form, was wanting in flesh and robustness, the very characteristics possessed in such an eminent degree by Mr. Booth's, but the cross, contrary to Mr. Booth's expectation, proved a most unfortunate one, the stock from Lord Spencer's bull being decidedly inferior. Similar cases have more than once occurred in my own flock of Leicesters, and this has strengthened my conviction that unless the male be superior, or at least equal to the female, in all essential points, deterioration must take place. Let me here, again, impress upon you the importance of selecting a bull from a herd superior to your own; he should, of course, be as perfect in form as possible, but the following points should be made a *sine qua non*—viz., good and heavy flesh, good looks, well sprung ribs, and, above all, a pedigree without blot. Bear in mind, however, that a long pedigree is not necessarily a good one. Success in breeding, I am quite convinced, requires a certain amount of intuitive knowledge; it is this which enables one to see at a glance when an animal is likely to be a good stock getter, or whether a young animal is likely to improve or deteriorate. I cannot believe that this faculty is possessed by many of the breeders of the present day; if it were, the quality of the cattle brought under our notice at sales and shows would be very different. To quote an eminent authority (Mr. Darwin):—"Not one man in a thousand has accuracy of eye and judgment sufficient to become an eminent breeder. If gifted with these qualities, and he studies his subject for years, and devotes his life-time to it with indomitable perseverance, he will succeed, and may make great improvements; but if he wants any of these qualities, he will assuredly fail." Before concluding this part of my paper, I must say a few words on the subject of in-breeding, a subject to me most interesting, but at the same time most complicated. I feel certain that, under some conditions, the experiment might be tried with every chance of success, but these conditions so seldom occur that it can be attempted

in but few cases. The conditions to which I refer are these:—If two animals be first rate in form and quality, without the slightest appearance of delicacy, or if the male be very good in points where the female is deficient, or if it be desirable to perpetuate any particular strain, then I think you might put father and daughter, mother and son, or, indeed, any relations together, with the exception of brother and sister. Bear in mind, however, that any defects in the parents would be exaggerated, and each generation would decrease in stamina. From personal experience, I cannot speak with any authority, having only tried the experiment once, and then upon sheep—the result was not satisfactory.

EARLY TREATMENT OF STOCK.

I feel some diffidence in addressing you on the subject of feeding, being well aware that there are many present who are better qualified to do so than myself. I must, therefore, be excused making any lengthened remarks, hoping that some one may be induced to offer a few suggestions before the close of the meeting. I shall begin by saying a few words on the rearing of calves, and their after treatment until fit for the butcher. I have always considered September, October, and November the three best months to begin rearing, that the calf may be strong enough to withstand the second winter, which is always the most trying time. Each calf should have, if possible, a loose box not less than 9 feet by 5 feet 6 inches, especial care being taken that it be well drained, any accumulation of moisture being most injurious. Each box should be provided with water-trough, manger, and small rack for hay. New milk should be given for a fortnight at least; this should be gradually supplemented by skimmed milk, and mixed with linseed or oil cake porridge, that as many as possible may be reared. A little good hay should be given as soon as the calf will eat it, and I believe that no better food can be substituted. A small quantity of linseed cake may also be given, with pulped roots and cut hay; if hay be scarce, a very little straw may be added. At the age of fourteen or sixteen weeks, the milk may be gradually discontinued, and a little flour substituted, which may be mixed with the pulp and chop. This treatment should be continued throughout the winter and up to the first week in May, when the calf may be turned out to grass, fetching it up at night for the first fortnight at least. One lb. of cake per day should be given during the summer, and by the autumn this treatment should have produced an animal in good condition, and well able to get through the ensuing winter. The cake should now be increased to $1\frac{1}{2}$ or 2 lb. per day, and equal portions of hay and straw may be given, chopped and mixed with pulped roots. If the stock are to be sold at an early

age, which I strongly advise, a small quantity of flour should be given with the chop. I would here impress upon you the importance of keeping every young animal in a thriving state; should it once lose its calf's flesh, it will take some time to restore it, and it should be remembered that time is money. At the end of the second winter, the yearling ought to be in good condition, and during the next summer he may be grazed in the store pastures with ewes and lambs. At two years old, those not sufficiently forward to be fed may be put into the straw folds; they should have an unlimited supply of cut straw mixed with pulped roots. If a sufficient quantity of roots can be allowed, they are, in my opinion, preferable for store cattle to any kind of cake. The heifers intended for stock may be put to the bull; a few of the rest, with some of the steers, may possibly be sufficiently forward to be fed in the winter. Feeding may commence with from 4 lb. to 5 lb. of cake per day, with as many roots as can be spared, and if possible a little hay; the quantity of cake may be regulated to suit the time when the animals are to be disposed of.

FEEDING OF EXHIBITION ANIMALS.

It is a much debated question with feeders whether the preference should be given to boxes, stalls or yards. I should place them in the following order: 1. yards; 2. boxes; 3. stalls. It depends, however, in some measure on the kind of cattle to be fed. Steers will improve faster in yards or boxes, but cows, from their quarrelsome disposition, do better in stalls. Farmers, however, have not often sufficient accommodation to admit of choice in the matter. In the foregoing remarks I have presupposed that the stock have been fairly bred, for it is only by this means that early maturity can be secured; at the same time I would have it understood that I am speaking of ordinary stock, and not of animals intended for exhibition. Not having any definite knowledge of the system adopted by the large dairy farmers in rearing, I cannot give any information on the subject, but beg to refer you to the forthcoming volume of the Royal Agricultural Society's *Journal*, where you will find some valuable hints in the account of the first prize dairy farm. I may remark that the calves on this farm were economically fed, and in very good condition. With regard to the rearing and management of first class breeding stock, I most strongly recommend that all the bull calves should, whenever practicable, be reared upon cows in the open pastures; they should suck from six to eight months, and a few weeks before weaning should become accustomed to artificial food, as a calf so soon loses condition after leaving the dam. Exercise should be given regularly, this being such an essential point. The bull calves will, of course,

receive the most liberal treatment possible until sold; the heifers only require to be kept in good growing condition, which can be done by giving a very small quantity of artificial food and good hay. They should be put to the bull at one and three-quarters or two years old, as, if this be longer deferred, they are likely to prove non-breeders. Stock for exhibition require the most liberal and careful feeding. Only so much should be given as can be consumed at once; if any be left it should be removed. This I believe to be the most important point in feeding. Change of food is also very essential. Linseed cake should be given with judgment; if too much be given, the animal is soon cloyed. But all these directions will be useless unless the intending exhibiter have an intelligent, persevering and trustworthy servant, as it must depend upon his exertions to bring out the animal in show condition at the right time, which is no easy matter. Economical feeding, *i. e.*, obtaining the best results from the smallest amount of food, is of the greatest importance; but it is difficult to lay down any special rule on the subject. I shall not attempt to give any opinion on the different feeding-stuffs and condiments now before the public, my experience of them being very limited, malt, however, excepted. I am convinced that it is one of the most valuable foods known, not only as a condiment, but as a fat producer. Animals for exhibition are kept in better health on malt than upon any other food, milk excepted. I only hope I may live to see the day when it will be within the reach of every farmer.

THE PRACTICE OF FEEDING ANIMALS.

BY DR. HOPKINS.*

You may remember that the elements of which flesh and fat are composed consist of four essential principles, which, by their combination or re-union, constitute nutritious matter properly so-called. 1. A nitrogenous or azotised matter, such as albumen, caseine, gluten, substances, which are, as far as is known, the foundation or origin of flesh ; 2. An oily or fatty matter which approaches more or less closely to fatty bodies in general ; 3. A substance having a binary composition, such as sugar, gum, fecula ; 4. Certain salts, particularly phosphate of lime, magnesia, and iron. The fundamental principle that animals find the several substances which make up their bodies, ready formed in the substances they consume, seems very well calculated to assist the practical farmer in managing the food of animals upon his laud ; for if flesh, fat, and bone exist all but ready formed in the food, it is obvious that the best kind will be precisely that which under the same weight contains the largest quantity of the various matters of the organization. It is a great point to ascertain the amount of nitrogenous matter contained in the food given to animals. The experiments of Professor Majendie, under whom I studied, have shown that substances which contain no azote, such as sugar, starch, oil, will not support life ; on the other hand, it is ascertained that the quality of alimentary matter, flour, for instance, increases with the amount of gluten which it contains. It is because the seeds of the leguminous vegetables are richer in nitrogenous principles—that is, in flesh ; that they are also more highly nutritious than the seeds of cereals. Several considerations, therefore, induce me to conclude that the nutritious principles of plants and their products reside in their azotized principles, and consequently, that their nutritious powers are in proportion to the quantity of azote they contain. Yet, I am far from considering that azotized principles alone are sufficient for the nutrition of animals ; but it is a fact that every azotized vegetable and nutritive substance is generally accompanied by other organic and inorganic substances which concur in nutrition.

* Read before the Carmarthenshire Farmers' Club.

HEAT AND FAT PRODUCING MATERIALS IN ANIMALS.

Let us see, then, how the common principles found in vegetables resolve themselves into two classes, one destitute of nitrogen, the other containing it. The former, to which I shall first refer, may be called the non-nitrogenous elements of food or the elements of respiration and the producers of fat. Those bodies in vegetables which contain no nitrogen are fats of any kind whatever, oil, starch, gum, mucilage, and various kinds of sugar. These bodies, I say, contain no nitrogen or azote; they are merely adapted for the production of fat or for the purposes of respiration. We take in by every inspiration a considerable amount of oxygen, which, after acting upon the carbon and hydrogen of these non-nitrogenous materials, passes out again in a consumed state. Let me here mention the amount of carbon consumed each day by various animals. Man consumes on the average 12 to 14 ounces, and there is required for that consumption 37 ounces of oxygen. The horse consumes 97 ounces, and requires 258 ounces of oxygen, and the cow consumes 70 ounces of carbon, and demands 186 ounces of oxygen. You clearly see that our animal economy requires that constant supply of heat producing materials should be brought into the system, and that a constant supply of oxygen should be taken into the lungs in order that the body be kept at a proper temperature. Now, after the temperature which is necessary for the animal economy has been arrived at, you have left the excess of food beyond that which the animal requires for heating purpose. What remains of the oil, the starch, the gum, the mucilage, and the sugar, after the necessary production of heat, is formed into fat. The excess of food Nature places upon the muscles in the form of fat, in order that if the animal be subsequently, through any misfortune, deprived of food, its days of feasting may in some measure minister to the necessities of its days of fasting. Of course, under such an arrangement, it is essential for fattening purposes, that the animal should be kept at a proper temperature, otherwise no fat can be formed from these materials. Warmth and repose, with absence of all resources of excitement, is very necessary to the production of flesh and fat in all animals, together with a circulation of air, necessary to carry off the carbonic acid gas which is constantly expired, and which, if inhaled over again, even in the proportions of from 2 to 5 per cent., is positively deleterious. I shall not do otherwise than name the chief nitrogenous substances used in the feeding and fattening of animals, such as hay, potatoes, beet, turnip, wheat, maize, oats, wheat straw, oat straw, clover hay, peas, haricots, beans, rape and linseed cake. If great accuracy be required, the stock should be weighed

weekly, the food and drink daily, and a reasonable number of animals, say fifteen to ten, pitted against each other, carefully watched, housed, &c.; you will then find whether and to what extent, you can rely upon the claims of any substance as a flesh-making material.

THE FEEDING AND FATTENING OF ANIMALS.

A great variety of experiments have for a long time been carried on for the purpose of testing certain methods of feeding. Between the external forms of animals and the internal organs essential to life, there is the most obvious and intimate connection. In horned cattle a broad and deep chest is the sure indication of ample lungs and a good general constitution. The pelvis or bony cincture formed by the rump and haunches ought to be spacious in the females; a small head is generally the indication of a good kind. Horns in our domesticated animals must be regarded as objectionable rather than useful, and by adopting measures which tend to repress their growth, we undoubtedly favor the production of flesh and blood. The strength of the animals depends far more on the degree in which their muscular system is developed, than on the mass of their bones; it is, besides, flesh and not bone that has value in the butcher's eyes. So that it is the farmer's business, by all means, to strive after a delicate but well-covered skeleton. Animals which have been indifferently fed when young, have often the bony system very disproportionately developed. Two modes are generally followed with a view to improving the external shape of domestic animals; one of these consists in only breeding from animals of the most faultless forms of the same race, and generally of close degree of kindred; another, crossing females with the males of a neighboring race, each possessing, in the greatest degree, the qualities which it is held desirable to transmit to the future races. I cannot help thinking that, although breeding in-and-in renders them handsomer and more likely to take on flesh for a time, yet I do not think that, judging from analogy, the system can be pursued for too long a time without judicious crossing; at any rate, all of you know that, other things being equal, the shorthorns are not so hardy in this climate as the blacks, that have from time immemorial been located here. It is a fair matter for discussion whether the black or Castlemartins can or cannot be considerably improved by care and intelligent attention. Thaer fixes 13 lb. as the quantity of hay per day which a cow requires for her maintenance in perfect condition, and if the animal be in milk he allows as many as 22 lb. to 33 lb., but the ration must vary with the weight of the animal. Mr. Perrault, another foreign writer, states 27 lb. as the allowance for a milch cow weighing about 880 lb., he having in his experience found that

an animal in milk required about $6\frac{1}{2}$ lb. of hay for every 220 lb. of living weight. A very large ox or cow, relatively to its weight, requires less food than an animal of smaller dimensions. And this circumstance is a grand argument with those breeders who are in favor of very large cattle. They say that if a large ox consumes more than a small one, still the increase in consumption is by no means in the ratio of the increase of weight. I say that the real difference is owing to the quieter disposition of the animal, the vessels going to support the flesh or fat being larger, attained by the before-mentioned careful crossing, so that some breeds have by such a system attained the faculty of laying more upon their backs, and others again more in the adipose tissues within.

THE RATIONS OF CATTLE, HORSES, AND PIGS.

Time will not permit me to show here the tabular account of feeding rations, whether for calves, neat, or feeding cattle. Suffice it to say, or sum up, then, it may be said that for every 100 lb. of living, neat cattle require for plain keeping $\frac{3}{4}$ lb. of meadow hay; when laboring, 2; when in milk, 3; growing rapidly, $3\frac{1}{2}$, which ought to be given with great regularity, and about three times a-day, constituting so many meals which, however, are well divided, the whole quantity for each meal not being placed before the animal at once. This precaution is particularly necessary when the allowance consists of green fodder. In fattening cattle it is, perhaps, of more importance than in general feeding, that the provender should be distributed regularly; plenty of soft litter and the greatest attention to cleanliness aid materially in fattening. The cowhouse ought to be dark—in a word, all the conditions ought to be combined which conduce to sleep and secure freedom from disturbance of every description. The older the cattle, up to eight years old, the quicker they feed, because younger animals require both longer time and more food, for the reason that they are forming both flesh and fat, and otherwise developing themselves. Cattle that have worked, feed soonest of all. In fattening during winter, which is done almost exclusively with hay in this and some other countries, an ox weighing 748 lb. upon 40 lb. of hay per day will increase by about 2 lb. daily. According to Mr. Low, an ox weighing 770 lb. and consuming about 2223 lb. of turnips per week, if he thrive, will gain in this same time about a stone, 14 lb. weight, admitting that the equivalent number for turnips is 676. I find that the ration of hay for this allowance comes out 47–8 lb. having produced exactly 2 lb. of increase. In attempting to make animals too fat, a great loss is incurred, because after a given amount of fatness, the greatest part of the food passes off in the dejections unassimilated. It is needless for me to add that oil-cake

and corn are great adjuvants in fattening, and lessen the time otherwise required. Mr. Anderson has found that an ox which is not absolutely lean will give for every 100 lb. of his absolute weight of marketable meat, 53½ lb.; an ox somewhat fatter, 55 lb.; and one completely fat, as many as 61 2-10ths lb. All of you are so well acquainted with horses that I need not attempt to enlighten you either as to their breed and qualities for agricultural pursuits or for the hunting field; everybody takes so much delight in that truly noble animal that before he leaves his boyhood, he mostly becomes well acquainted with the character of his horse and his requirements. I will merely add that the daily allowance to a horse of middling weight and doing ordinary work, may be regarded as good when it consists of hay, 8.2 lb.; oats, 7.2 lb. Or substituting for hay, furze *ad libitum*, but for fast work or the hunting field, half as much again of oats, with 2 lb. beans may be added to the former; green food will not do for fast work, and even the hay should be lessened. The pig is met with in all farms, and is a very necessary appendage to rural economy. Offal of all kinds that would go directly to the dunghill is turned to the very best account, whether from the dairy, barn, or kitchen garden, or the harvest field—nothing comes amiss to him that is edible; but the rearing and fattening of pigs, although frequently looked upon as a matter of course, really demands considerable attention and certain convenience of situation. The rearing of pigs in a general way may be said to suit the small farmer better than the great agriculturist. According to Thaer, the hog that is disposed to take on fat is distinguished by length of body, long ears, and a pendulous belly. It is generally allowed that twelve weeks are required to bring a hog into prime condition, when he ought to have a layer of fat under the skin upwards of 1 inch in thickness. Sixteen weeks may be required to obtain an animal really fat; and twenty weeks to have been in the highest point that is attainable. The hog requires to be fed regularly. I have found that eight pigs which at the time of weaning weighed 114 lb. or 14.3 per head, at a year old weighed, under the ordinary food, 1320 lb. or 165 lb. per head—increase in eleven months, 150 lb. per head, but they had whey also. In fattening hogs at a year old, it may be stated, as a rule, that 6 lb. of barley meal make about 1 lb. to flesh; which may be increased considerably by other ingredients, such as potatoes.

THE HEADS OF SHOW ANIMALS.

We abridge the following article from the new number of the Bath and West of England Society's *Journal*. It is from the pen of Mr. Henry Corbet :

At a dinner-table one evening at the Farmers' Club, a discussion incidentally arose as to the chief points to be taken into consideration in judging an animal, when there was a very unanimous opinion in favor of heads and shoulders. Narrowing the argument, again, to any one particular point to go by, there was a clear majority amongst the half-a-dozen or so who joined in the conversation, in favor of heads. The shoulder, no doubt, answers very much for shape and symmetry, and frame, but the head answers for everything. If you go for breed, you look above all to the head; if your aim be style or fashion, you must seek this in the head, as nine times in ten that very accommodating phrase known as quality should prove itself by a good head. You get at the very purpose of an animal by a look at his head. The calm, placid countenance of a naturally thriving beast; the noble, masculine, well-defined features of a sire of any character; the several uses of the horse, the instincts of the dog, and the mere gluttony of the pig, how safely you may arrive at the conclusion by studying the head! A scale of points for one or two certain breeds has already been drawn out; but in none of these is sufficient importance, at least as I am led to think, attached to the head of an animal, as the main index to his purity of blood, strength of constitution, and actual fitness for that service for which it is intended. Who would take to himself a bull with a mean, delicate "cowy" head? And yet I have seen such distinguished in a Royal show-ring. Or, who would crave for his own riding, the sour-visaged, vicious-eyed hack? Or care to breed, or try to breed from the steery-looking heifer, which has lost the very semblance of her sex, from the misdirected zeal employed in feeding her up for show? A man may save himself a deal of money, trouble, and disappointment, by making the head a first principle in establishing a flock.

The head of a shorthorn bull should be broad and moderately lengthy, with a full open countenance, a large prominent eye, and plenty of width

between the horns, where there should be a good covering of hair. The horns themselves must be strong and slightly backward, with a very gentle inclination upwards, positively upright horns being the worst of all kinds. From being broad above, the head should taper gradually towards the nose, but not too decisively, as nothing is worse than a bull with an "egg-sucking" frontispiece, as a houndsman would say; and the muzzle itself should be of a clear cream or flesh-color.

But the perfection of the improved shorthorn's head is to be found in the female. The very expression, so calm, so sweet, and so dignified, is of itself a delightful "study;" and when old Homer, in the way of compliment, applied so continually the epithet, *bo-opis*, or ox-eyed, to his matron goddess, he must have drawn upon the future, and have pictured to himself the noble, self-assured, full-blown beauty of one of our modern shorthorns. The horns of the shorthorn cow should be slightly curved and spreading, bright and clear in complexion, with a bronze tapering tip; the nostrils wide, with the ears large, and fringed with that fine delicate hair "only to be found," according to an enthusiast, "on a pure-bred shorthorn." Still, good though the head may be, this loses nearly all its fascination if it be not properly set on. It should run elegantly into the somewhat full, firm neck, with plenty of play and style in its carriage. Any animal which droops its head in a half-guilty, hang-dog fashion, can never show to advantage.

Early maturity or quick feeding is the chief recommendation of a shorthorn; and so when we look one in the face we must bear in mind that what we want is, as Mr. Carr puts it, "a placidity and composure of mind, a phlegmatic disposition, suggestive of fattening propensity." In fact, a frisky shorthorn should be something of an anomaly.

Not so the Devon. I should myself have a fancy for a certain wildness or boldness in the head of a pure North Devon; and when Captain Davy says this should in many points resemble the head of the deer, he seems to me to have very happily illustrated his subject. With such a description, apt to my hand, it would be worse than idle to attempt any other than that I have from Captain Davy—"The head should be small, with a broad indented forehead, tapering considerably towards the nostrils; the nose of a creamy white; the jaws clean, and free from flesh; the eye bright, lively, and prominent, encircled by a deep orange-colored ring; the ears thin; the horns of the cow long, spreading, and gracefully turned up, tapering towards the ends; in fact, the general aspect of the head should in many points resemble that of the deer. At the same time, the expression must be gentle and intelligent. The horns of the bull are thicker set and more slightly curved, or in some instances standing out nearly square, with only a slight inclination upwards. Fault has been

found with the length of the horn of the Devon as being disproportionate, and we have been recommended to get them more like those of the short-horn; but I hope, and indeed feel sure, that our breeders will never consent to give up one of the characteristics of their breed."

A well-known judge and breeder tells me that, beyond the color of the face, and the length and straightness of the horn, the good points in a Hereford bull's head cannot differ much from those to be appreciated in other breeds. While, however, the horn of the bull runs straight and level from the poll, those of the cow and ox gradually curve upwards. The eye of the male should be rather lively than otherwise, and that of the cow conveying precisely the same calm, comfortable, good-tempered look which I have already identified with the shorthorn. The eye should be of a beautiful clean white in color, backed by a rich red, more especially in the bull; the horn also white or light yellow, occasionally tipped with black, and the nose white; although here, again, we have the evil of black noses, which come, it is said, more frequently in Herefords than in any other breed of cattle. The head should certainly not be small in proportion to the other parts, as, in fact, a head either large or small out of proportion is simply a deformity in any animal. A really good head must have a certain length and breadth, to which such a phrase as small can never reach.

One of the kindest heads I ever saw on a Hereford cow was that of Stately 2d, the property of Mr. Evans, of Swanstone, though she never did quite so well in public as might have been expected; but

"If to her share some trifling errors fall,
Look in her face and you'll forget them all."

The champion Hereford bull of this day, on the contrary, begins with a somewhat mean, small head; whereas there should be something very noble in the head of a whiteface, when seen at his best.

There is no animal which tells more of high breeding than an Alderney, or rather a Jersey-born cow. There is a refined air and carriage, a certain comely "presence," which would forbid all thoughts of the butcher, and never carry one's appetite beyond a syllabub on thin bread and butter. Beyond a peculiar, wild, wicked eye, there is not much to admire in the head of an Alderney bull, and even the cows lose much of their graceful character when bred away from their native isle. In the Jersey scale of thirty-six points for a perfect cow or heifer, one each is allowed for the following excellencies:—"Head small, fine, and tapering; cheek small; throat clean; muzzle fine, and encircled by a light color; nostrils high and open; horns smooth, crumpled, not too thick at base, and tapering; ears small and thin (one point), of a deep orange color within (one point); eye full and placid." The eye of the bull must be

lively and his horn tipped with black, but beyond these the points are much the same. The Jersey Society goes on to distribute the other points over the back, the barrel, legs, and so forth; but if we put down fifteen points for the head, and ten for the udder, leaving the other eleven for general appearance, we should arrive at a tolerably accurate, if not so elaborate, an estimate of an Alderney, which, after all, you must judge mainly fore and aft. I cannot believe in any man entering a ring with a pencil in his hand and carefully entering one point for this, and another for that, until he had proved a very pretty little sum in simple addition. He would surely "bother" himself during that somewhat tedious process.

Mr. M'Combie, again, speaking of course of his much beloved black Polls, says:—"A perfect breeding of feeding animal should have a fine expression of countenance; I could point it out, but it is difficult to describe upon paper. It should be mild, serene, and expressive. He should have a small, well put-on head, prominent eye, with a clean muzzle. Thick legs, thick tails, sunken eyes, and deep necks, with thick skin and bristly hair, always point to sluggish feeders."

Let us look to another kind of Scotch cattle, and what would the West Highlander be without his head? The butcher will say in answer—"the very best beef"—but with his head all his character is gone. There is a wild grandeur, I had almost said majesty, about the head of the Highlander, that should count up very fast in any scale of his points, as perhaps no other animal shows in this respect such insignia of nature's nobility. You may read of his Highland home in his clear, bright eye, his magnificent horn, and his rough, but right royal coat. And the southron would seem to have a deal still to learn in this way, for at the Smithfield Club Show of 1869, the judges selected as the best Highland ox, an animal with an ugly "cowy" half-Ayrshire head, that was no doubt a mongrel, and a new class had straightway to be instituted, in order to avoid such awkward "findings" for the future.

I am inclined to doubt whether the ancients could really have had any correct idea of what a horse's head should be, from the very name which Alexander the Great gave his almost equally renowned charger, *Bucephalus*—a composition of two Greek words, *bous* and *kephalos*, that is the head of a bull; just about the worst kind of a head a horse could have. We see this repeated, however, at a later period in the animal on which the knights of the tourney were mounted, where the same thick, broad bull's head is very commonly the type. But a man in armour was of course a great weight, and his war-steed probably more of a heavy draught-horse than the stamp upon which we now see a dragoon officer. In fact, the modern charger, the hack, and the hunter, must all show

breed ; and let me thus endeavor to sketch the head of a well-bred horse, as it should be. The size of this must be in just proportion to the body, as certainly not noticeably small, but of a happy medium in length and breadth. Indeed, a horse's frame should "prove" by his head. The ears should be long, somewhat thin, and moderately open and not set too wide apart, nor pricked up, but rather with a gentle inclination at the points towards each other. There is scarcely a movement of the ears but which has its meaning, and on this our barbarian ancestors improved by cutting them off! A lop-ear is assumed to indicate coarseness of breeding and sourness of temper, but this is not invariably the case. I have seen some thoroughbred horses with lop-ears ; and Oulston, who carries his very drooping, is, in other respects, a horse of particularly bloody like appearance. Beginning, then, with the lengthy, flexible ear, the horse's forehead should be broad, bold, and gradually expanding in width from the poll to between the eyes, which should be set in the head a third of its entire length from the poll. Nothing has a worse effect than the eye of the horse being set up too high in his head. And the eye of the horse is, of course, one of his great beauties, or one of the chief tests of his worth. Dark, bright, and lively, it should be a combination of spirit, sagacity, and gentleness, as in fact the eye of a gentleman. Especially to be avoided is the small, sunken, pig's eye, which tells of everything that is bad.

To proceed, the face from the forehead should be rather round—not exactly bulging like the Gohannas—gradually reaching to a slight dip between the eyes and the nostrils, and then rising and falling again before coming to the nose. The nostrils should be square and open, with a sharp angular look about them that gives a certain peculiar grandness and force to the face. It is the expression of the horse's countenance which constitutes his chief charm, and there are many sober-headed horses who, without being handsome, show this all but speaking intelligence in a very remarkable degree. The jaw should have a sweep from the root of the ear, with a good depth and a width of channel, tapering gradually to the muzzle. The lip, another sure sign of blood, should be thin, firm, and of moderate length, as the pendulous thick lip is unsightly in itself, and a tell tale of bad breeding. A fat or fleshy head cannot, of course, be ornamental to either man or beast, and, as every man could see "no merit in a very prominent eye," he rather "admires a tolerably full," one has his own fancy, mine is for a longish, lean head on a horse ; how many good nags have I known with that serious, almost judicial cast of countenance ?

If we go by heads, indisputably the highest bred looking sheep are still the two breeds to which the most of the other sorts trace something

of their excellence. I refer, of course, to the Southdown and the Leicester, either in its way of a very patrician type. Next only, indeed, to the thoroughbred horse or the Jersey cow, there is not an animal on the show ground which carries more style and "stamp" on his countenance than the Southdown. Moreover, to see him at his best, you must bring him straight up from the Sussex Downs. The best bred sheep in appearance at this present time are surely to be found in the Duke of Richmond's flock; and no man could safely go further in improving the Southdown than the justly celebrated Mr. John Ellman of Glynde. It is to his standard that we must look, if we wish to work on right principles, as it is to him I shall turn for the definition, although he begins with a statement which cannot be passed without comment—"The smallness of a sheep's head is an indication of its being well-bred." There is nothing neater than the head of a Southdown; but, as a rule, a very small head is objectionable in any animal, more particularly a male, and that capital judge of a sheep, Mr. Henry Lugar, confirms me in this opinion—"The head of a Southdown," as he writes to me, "may be too small, and if the sheep be kept on for breeding purposes, delicacy will, in time, be the result." Mr. Ellman's description runs on thus:—"The head should be neither too long nor too short, the lips thin, and the space between the nose and the eyes should be rather thin;" but as Mr. Lugar adds, "a little wider just above the nostrils than nearer the eyes." Ellman, in continuation, says, "the under jaw or chap ought to be fine and thin, the ears tolerably wide, well covered with wool, and not too thin;" while, according to Mr. Lugar, they should be "of a fair length, standing well up, but not prick-eared." Ellman says "the ram should have a bright looking eye, but the eye-cup or bone should not project," for the reason, as he gives it, that the ewes would have more difficulty in lambing. In so sharp a sheep as the Southdown, the eye of the ram should be lively, if not somewhat bold, in contradistinction to that placid gaze which men so covet in some other breeds of stock. Ellman concludes his description by stating that "sheep should be well covered with wool on the forehead, and especially between the ears, as it is a great protection against the fly." Noticeably enough, this authority, who flourished about the beginning of the present century, says nothing of the color of a Southdown's face—a point which fanciers now often look to before any other, as one which breeders cannot always maintain. I have seen Southdowns exhibited but a few years since, from a very famous flock, nearly as light in their countenances as Leicesters, and I have heard of others getting their lambs as dark as Hampshires. The happy medium or proper tint is a beautiful mouse color, in admirable keeping with the structure of the head and the texture of the wool.

The head of a Shropshire ram should be black; but this color should not extend to the wool on the neck. In size, the head should not be too small and effeminate, with a bold, broad, but not coarse forehead, full eyes, and tolerably prominent ears, self-colored but not mottled. The ear, although not so long as to be remarkable, should not be so short as to be hidden by the wool, which should come well up round the back of the head and ears, with a tendency to cover the top of the head. The nostrils must be fairly expanded, but there should be no inclination to bareness about the ridge of the nose, nor between the nostril and eye—any such want of covering being objectionable, and never to be noticed in a ram of any repute. There is altogether a strength and force about the head of a true Shropshire that should never be disregarded when looking at such sheep. The wool of the Shropshire should be close in texture, and not inclined to curl.

Any study of the heads of cross-bred animals or newly established breeds is not so satisfactory in the way of a test, as the flockmasters themselves seem scarcely to have agreed as to precisely what they should go for. The subjoined synopsis of the head of an Oxfordshire Down ram may consequently not accord with the views of all, but it reads to me as a very good type to aim at. It should be long and tapering, with a forehead not too broad, but sufficiently so to give a good masculine expression, with a full bold eye, and ears well set back—that is, not too near the eyes. The poll must be well covered with wool, adorned with an ample top-knot on the forehead, and the face of a nice dark color, between a jet black and a fawn.

There is something very taking in the clean finely cut features of a Leicester, over whose head those two great men—Bakewell and Ellman—agreed to differ. The long-wool man considered the prominent eye in a sheep an indication of good breeding, whereas the other “could see no merit in a very prominent eye.” The face should be rather long, as denoting size, but should be shortened in effect by a broad indented forehead. The bridge of the nose should be somewhat broad and arched, or Roman-nosed, with wide open nostrils of a jet black in color. The ears, of a fair length, should occupy a prominent position on the head, not too low, nor set very far apart: and the “high-quality” well-placed ear of the Leicester is a very safe sign of his purity. The ears and the head should be covered with beautiful silky wool—another proof of good breeding; while there must be a peculiarly delicate tint of blue visible just beneath the wool on the head, as in fact your true Leicester is as proud of his blue blood as a Spanish hidalgo. The Leicester head should be especially bare and quite free from wool of any strength, the expression somewhat

sedate, but of marked character in the ram, and his head set on rather bold and lofty, in preference to the low drooping carriage which, at one period in his history, was considered to be "the proper thing."

It is sufficiently suggestive to find that the breeders of Border Leicesters have a positive horror of the blue cast, a fact which of itself goes far to show that this variety of sheep has come from a cross, most probably with the Cheviot. The borderer, indeed, lacks much of the aristocrat in his appearance, so noticeable in the English Leicester of older pedigree. The head is longer and not so refined, the neck thin and weak; and, though the Border may by this time be perhaps ranked as a breed of itself, there is not much to go by in his frontispiece. He hardly looks as if he ever had a grandfather.

I wish we could see more at the West of England Meetings of a far more ancient family, which should furnish one of the leading sections of the show. I, of course, refer to the grand towering Cotswolds, of which Mr. Well, of Hampnett, writing many years since, says: "The head should be long and thin, the ears rather wide and not too thin, having no wool, but a tuft on the poll;" whilst I am indebted to Mr. Robert Garne, of Aldsworth, for a better and more elaborate reading of a Cotswold countenance. The head should be wide between the eyes, and the eye itself full, dark and prominent, but mild and kindly, and in no way coarse about the brow. The face should be proportionately wide to the space between the eyes, but not too flat, and should run off much the same width to the nostrils, which must be well expanded and somewhat broader than the face, with the skin on the nose of a dark color. The cheek is full, and, as the face, well covered with white hair; a just perceptible blue tinge on the cheek and round the eye being rather "fancied." The ear long, but not heavy, of medium thickness, and covered with the same short soft hair, should be carried well up, while black spots on the point of the ear are not considered objectionable.

Of the other breeds, the improved Lincoln now looks to take much after the Leicester head, although coarser in its character; while the true Dorset, with his nicely curled horn, should have a white eye in harmony with the color of his countenance, although the best sheep of last season showed an eye as black as a sloe. As for the Scotch blackface, he is as handsome in his degree as the Highland beast, as he tells alike by his head of the wild country from which he springs.

Mr. Fisher, of Carhead, in his scale of 110 points for a perfect pig, allows eight for the head. The head of the improved Berkshire, of course, is a different animal from the old-fashioned Berkshire or Hampshire hog, which should be something the shape of a cone, though not too

pointed nor at all turned up at the nose, but short, straight and deep; in fact, about as long as thick through, at a line to be taken from between the ears. There should be but little white about the face, if still with a sprinkling of light-colored hair on the center of the forehead, as well as on one or both eyes; whereas black markings on a white pig are not liked, and I have known very keen hands try to burn them out by show time.

THE WHEAT ROOT MAGGOT,

(*ANTHOMYIA FERRUGINEO-VITTATA.*)

We adopt the above scientific name for this tiny but formidable-crop destroyer, in deference to an eminent entomological authority, but we may mention that naturalists are by no means unanimous, for while others have since admitted that it may be an *Anthomyia*, it has also been referred to the genera *Oponyzas* and *Diastata*; but without the specific name being condescended upon, and that of *ferrugineo-vittata* (rusty with dots, or rusty dotted) if correct, is considered not to be very applicable or happily chosen. This uncertainty regarding an insect that has effected such wide spread devastation as the wheat root maggot has accomplished in the present and former seasons, shows a lamentable deficiency in general, but more particularly in what may be termed practical entomological knowledge. Nor is the matter mended if reference is made to the best treatises on plant-destroying insects; for neither in that splendidly illustrated work of Curtis on the "Plant-Devouring Insects of Britain," nor the still more elegantly got up volume, by T. W. Harris, on the "Insects injurious to Vegetation in America," is this veritable wheat root maggot noticed, although, in both, some of its works of mischief are seemingly alluded to, but erroneously charged against others. A strong argument this against the apathy of our National Agricultural Society in not offering compensating awards for tracing out and recording the transformations and history of special or individual kinds of insects, that are hurtful to field plants, which knowledge is most essential to guide in the attainment of remedial or preventive measures, for either mitigating or arresting the destructive doings of these pests.

In conversing with cultivators from different parts of the kingdom, we have found that only a very decided minority of them attribute the losses in their wheat crops to the wheat-root maggot; nor are the writers of agricultural reports much nearer the mark, for the blame is assigned to "winter killing" and "winter pulling out"—whatever these terms may mean—as well as to throwing out by spring frosts; the ravages of grubs, wire-worms, caterpillars, slugs, &c., while to these, some, with commendable caution, add the clauses, "or from some other cause." Seeing that it

is in the first or larva stage of their existence, that insects are generally most destructive to plants, although some exceptions occur, such as the turnip fly, and others of the beetle family, it is highly desirable that in speaking or writing of such larvæ, strict attention should be paid to correctly applying their distinctive names, of maggots, grubs and caterpillars, which, without going into the more minute differences applied by naturalists, may be thus characterized :—

Maggots, which are also locally designated *Mawks* and *Gentles*, are the footless larvæ of the two-winged flies which constitute the order *Diptera*.

Grubs have twelve segments or rings besides the head, and three pairs of fore-legs, with, in some instances, a single terminal support or pro-leg, and are the larvæ of beetles and weevils, comprised in the order *Coleoptera*.

Caterpillars have, like the last, twelve segments or rings besides the head, and three pairs of fore-legs, to which are added two to five, or, in rare instances, more pairs of hind-legs, and are the larvæ of butterflies and moths, which form the order *Lepidoptera*.

Or, these may be still more briefly described thus : *Maggots* are larvæ without feet; *grubs* have three pairs of fore-feet; and caterpillars have three pairs of fore-feet together, with two or more pairs of hind feet. On examining the wheat destroyer here alluded to, it will be seen that it is a true maggot, and we have applied the prefix of wheat-root, to distinguish it from that occasionally scarcely less formidable crop destroyer, the wheat-ear maggot—*Cecidomyia Triticæ*.

It may be some consolation to wheat-growers to know that all danger from the wheat-root maggots is now over (June) for the season; lately we could only discover a very few specimens, and that in a high and late situation, all the others having changed into the pupa or inert stage of their existence, from whence they may be expected to emerge as flies somewhat resembling those house pests which frequent our sugar-bowls when the wheat plants are in full ear. And it is to this third and last stage of their existence that attention should be generally and carefully directed, for the purpose of ascertaining how and where their eggs are deposited, from whence the maggots of next year will, in due course, emerge; for when this knowledge is acquired, there only remains the discovery of a mode whereby those eggs may be easily destroyed, in order to free future wheat crops from like visitations with those which have lately been so disastrous.

The following notes of observation, which have recently been made in some of the best wheat districts in Scotland will serve to exhibit the alarming amount of crop-destruction which the wheat-root maggot has

there accomplished in the present season, and there is but too much ground for belief that in many other parts of the kingdom, the losses have been at least equally severe.

April 23.—Inspected a number of wheat fields in Clackmannanshire, chiefly composed of strong clay soil; found the maggots everywhere at work, and fully half of the plants already destroyed.

May 6.—From Edinburgh *via* Stirling to Perth: observed in all forty-four wheat fields by the sides of the railway, in at least thirty-eight of which more than half of the plants had been destroyed, while in five of these more than three-fourths of them were gone, four of them were being in part ploughed up and re-sown with barley, and several additional fields between Edinburgh and Stirling seemed as if they had been recently wholly ploughed up and re-sown; while in the six least affected fields, about a-third of the plants seemed wanting.

May 11.—Going from Edinburgh by the Waverly route, twelve fields were passed between the capital and the upper wheat-growing part of the county, from ten of which the plants had more than half disappeared, and the maggot ravages, although less prominent, were readily perceptible in the other two; while, of the former, three were partly ploughed up and re-sown with barley, and at least four others appeared as if they should have been treated in like manner.

May 12.—Between Portobello and Haddington, passed fifteen fields, of which ten seemed less than half, and four about two-thirds planted; while in one the maggot ravages were little more than just perceptible. Went, in the afternoon, with Mr. Patrick Sheriff, that eminent raiser of new cereal grains, to see his collection of wheats, in a south-lying field about 1 mile north of Haddington. These were growing in drills 1 foot apart, across a 20-foot wide ridge, on the east side of the field, where they had the protection of a substantial stone wall, and numbered in all, 109 kinds, besides 40 seedlings of last year's crosses. Only a few traces of the maggot were discovered among these, although, in the remainder of this field, and also in an adjoining one, fully half of the plants had perished. In searching here for maggots only two or three were found—they having all become pupæ. And it is worthy of remark, that in these two fields more than a dozen of wheat plants variegated, or "ribbon grass"-like leaves, were discovered.

May 13.—Through the kindness of Mr. D. Roughead, the well-known seedsman of Haddington, and accompanied by him and Mr. Patrick Sheriff, enjoyed a drive on a delightful day through an extensive, richly cultivated portion of East Lothian, but a portion of it being rather above the wheat growing districts of the county, only twenty-one wheat fields

were passed, of which five were less than half, and two about two-thirds planted; while in seven, the maggot ravages, although apparent, were comparatively harmless, and in the other seven were scarcely distinguishable. Passing out of Haddington by the Gifford road the first five fields presented the two worst phases of maggot destruction. The next three, which were at a considerably higher altitude on Mr. Roughead's farm of Myerside, we include among the exempt fields; having only discovered very slight traces, and secured two specimens of the maggot, in walking through them. The soil was of a very heavy nature, and had been stirred to more than usual depth by steam cultivation. Here we were shown about 30 Scotch acres of Swedish turnip seed, for his East-Lothian improved variety of which Mr. Roughead has long been famed, and the plants being in bloom, a good opportunity was afforded us of judging as to the remarkable purity as well as excellence of the crop. At Tanderlane, in the highest wheat field visited, we secured six specimens of the maggot, all evidently verging on their change to pupæ, and here their presence, although very perceptible, could not have been pronounced very hurtful. The same remark applied to the next five fields. When descending to a lower altitude a decidedly worse one was encountered, followed in turn by two still lower fields, which were pronounced almost exempt. Then, just after crossing the river Tyne, east from Haddington, two fields were noted as being half destroyed; while in their vicinity, and in alternate order, two were exempt, and two evidently but not very injuriously affected, thus effectually upsetting the theory that the higher districts were more exempt than the lower from the wheat-root maggot; and in the query of, How is this accounted for? adding another puzzler to those who form hasty conclusions as to the causes that promote root-maggot destructions of wheat.

On the high rented farms around Edinburgh the wheat-root maggots have been particularly destructive, and in many of them large breadths have been plowed up. It does not follow, however, that the ultimate loss of crop will be in proportion to that of the plants, for where say half of these are destroyed, half of the crop will not be lost, as those plants which are left will have room to stock or tiller out, so that each will produce more ears than they would have done standing at full thickness. Unquestionably, however, the loss will be very great; and the excessive growth of weeds where the wheat plants are too thin, will tell heavily against the future fertility and working of the land.—*Country Gentleman's Magazine.*

FLAX CULTURE IN THE UNITED KINGDOM.*

Climate divides, in the United States of America, the cotton-raising portion from those parts of the country in which that crop will not grow. But no such inexorable dictator at all interferes with the boundaries of flax cultivation, which are in the power of the farmer in every part of the United Kingdom, to shift as he pleases. Farmers, however, consider the chances of sale as well as of profit; and while they are in sympathy with the consumers of corn, they seem to have yet to find out what the wants of the manufacturers of textile fabrics are, and how they can supply them with that fibre, without which the spindles of the factory can no more be made to go than would the millstones of the corn mill be moved if wheat and oats could not be had. We shall therefore bring a few facts in the history of flax manufacture together, with the view of showing how much the cultivation of the flax crop may contribute, at once to the ends of progress in our manufacturing industry, and the increase of reward for their own labor.

Amongst the most ancient of textile trades anywhere, linen is foremost; and, so far as the United Kingdom is concerned, it was the leading textile trade of these countries until the early part of the present century, when cotton was allowed to cut it out for the time being.

The restoration of the linen trade to its proper place in respect to cotton is, therefore, the first effect extensive flax culture would have, and in the production of such a result farmers would, in addition to the securing of better agricultural profits, give occasion for the increase of demand for every article of food raised on a farm. The first point in the process of cotton manufacture in which any person in the United Kingdom can be interested, is when a British capitalist becomes, by the favor of a friend in the United States of America, a shareholder in one of the liners in which cotton is usually carried, or when it is imported in British bottoms. Then, as warehouse keepers, laborers, brokers and bankers, in connection with the import of cotton, the British do gain, and have gained largely but the gain of our people on our textile trades, so long as there is employed an undue proportion of cotton as at present, in regard to flax, must be greatly less than it would be if flax was restored to its proper place.

* This series of articles on Flax is copied from the *Edinburg Country Gentleman Magazine*.—[KLIPPART.]

The people of England had a linen trade since the days of the Romans, but they allowed it to drag out a miserable existence up till the beginning of the fourteenth century, when Edward III. invited weavers from Flanders, and he tried to improve the trade by making more linen at home, and importing less, as the fibre was thus beginning more generally to take its natural place (in a sanitary sense) in regard to woollen cloth. In Wales, Scotland, and Ireland, linen cloth had long to contend with woollen in the make-up of a wardrobe, but the general result for several centuries past was in favor of a fair divide; and it was not till it had to grapple with cotton that it lost ground so sadly, as to be placed in the position it now occupies in the United Kingdom amongst textile fabrics. So long as the battle was between favorites of kings and the pets of Parliamentary patronage, linen never fared so ill as it has done of late. When those by whom it should have been held in its place were the growers of flax and the spinners of fibres, and those who were interested in lessening the consumption of linen and increasing that of cotton, were trans-Atlantic merchants and the cotton lords of Lancashire, flax had at once poor supporters and most formidable foes. The days of monopoly are gone; and while there is no hope in the direction of Crown patronage, or a subsidy from the Exchequer, there is, nevertheless, some confidence to be placed in an enlightened public, whose verdict, as between the rival claimants of flax and cotton for a first place, will be according to evidence. Already, the United Kingdom exports piece goods to Russia, Prussia, Hanse Towns, Spain, Italy, and the United States of America; also linen yarns to most of these and other places, as well as to British Colonies; but for want of flax, after importing from Russia, Belgium, and many other countries, this trade, which is both directly and indirectly more profitable than cotton, is cramped and circumscribed.

We ask not only agriculturists, but the public generally, to consider the bearings of the flax culture cause upon every interest in the country; and we believe that so soon as the matter is at all fairly considered, the result will be, that while we congratulate ourselves in having kept pace with the progress of the age in everything else, we must admit we are behind in respect to the position we place flax and cotton in respectively. Do as we may, we can gain but little by cotton in comparison with flax; and that little lessens rapidly, and may be very small indeed ere long, if the cotton-spinning trade of the United States of America continues to prosper. Let us be as slovenly as we can for shame, and we cannot but gain much on flax, and whatever we gain must be increased in proportion to our successes in technical education, the invention and making of machinery, and in agriculture and commerce generally.

Scotland has made a bold beginning in the trade. Her mills, which are chiefly on heavy goods, are now probably nearly 200, whilst those of England are under 150, and Ireland not many more than 100. The hemp trade of Scotland is also far ahead of that of England and Ireland; whilst in jute, the enterprise of the Scotch has been such a pattern as we should like to see followed in regard to flax. But while a sufficient supply can be had of cotton for all classes of fabric, the supply of flax is so limited as to forbid expansion, both in the Dundee or heavy goods department, and the Belfast or light goods branch, as well as in the trade of England in linens, and such is the present state of the trade in the United Kingdom.

FLAX GROWING IN ENGLAND AND SCOTLAND.

A fact, we believe, not generally known, is one applied by the Agricultural Returns recently issued, viz., that in every county of England and Wales flax crops are more or less cultivated. The acreage under this crop, like other crops, varies considerably. Thus, in Rutland, where, in 1869, there were 87 acres in flax, in 1870, there were only 2. In Berks, Chester, Cumberland, Durham, Hants, Hertford, Middlesex, Monmouth, Salop, and Westmoreland, there is also a falling off. In Lincoln, Suffolk, Norfolk, and Cambridge, in which counties most flax is grown, there is considerable increase; in Suffolk alone there is an addition of 1000 acres. The increase in England, in 1870, over 1869, was 2871 acres, and in Wales, 70. The total acreage under this crop last year in England was 22,354, and in Wales, 204. That the crop should be more cultivated where it is best known, seems, apart from all other reasons, a fact worthy of notice, as it obviously indicates a growing feeling in its favor. There is not, as yet, however, a sufficient breadth under the crop in any county to justify the introduction of the most economical modes of manipulating the fibre; but so far as the saving of seed is concerned, it makes but little difference how many or how few acres are cultivated.

Flax is no stranger in England, for the existence of a woollen, and also a linen manufactory, for clothing the Roman army in Britain, at Venta, Belgarnie (now Winchester), is a matter of history. But even before the Romans entered England, the people were, if not as expert as the Gauls at the spinning of flax and weaving of linen cloth, yet they also practised both, as did their neighbors. It seems that the manufacture of flax was for some time neglected; but it does not appear that even the use of linen cloth ceased in England from the earliest time in which it was known. Perhaps the knowledge of the linen manufacture came from the Phœni-

cians, as a consequence of their visiting Cornwall for the sake of its minerals.

Not a county in Wales returns a blank as to flax crops in 1869 and 1870. In Anglesea, 2 acres are returned for each of these years. In 1869, Brecon figures for 3 acres, and in 1870 for 27 acres of flax crops. In Cardigan, Carmarthen, Flint, and Radnor, there is an increase; while in Carnarvon there are 3 acres for 1869, and only 1 for 1870. Glamorgan has, in 1870, only 20; in 1869, 23 were grown in that county. Montgomery shows a falling off; and Pembroke has the same (12 acres) in each year.

So much for the present. In the past, as we learn from sources not to be doubted, flax and wool were spun by the females of every Anglo-Saxon household; and, as everyone knows, having spun the necessary quantity of wool or flax to make the requisite supply of cloth for probable household use, at once entitled a young woman to a husband, and conferred on her the title of spinster—a term of honor still applied to young ladies of marriageable age. The daughters of the people in all ranks spun, and spinning was the household work of every house, not excepting that of the king—the daughters of King Edward the Elder, and sisters of Athelstan, being famous spinners.

Flax crops, we think, might be greatly increased in every part of the United Kingdom, except, perhaps, in the Province of Ulster. Such an increase would yield at least £3,000,000 more than is raised by the present modes of cropping, while it would not lessen the fecundity of the soil, or so sensibly reduce the supply of food as to be felt injuriously. The question, whether or not flax is, in any special sense, a “scourging” crop, may safely be left open, though those most experienced in the culture of the crop refuse to believe any such statement. But supposing it be so, under the slovenly mode of setting still continued in Ulster, it only needs a little, very little enterprise, and an outlay not worthy of consideration in comparison with the certainty of profitable results to restore to the soil, in kind, everything the flax crop takes from it. If this were done, the differential profits on farming, including a flax crop in any rotation, as compared with those of cases in which it is excluded, might be set down at £4,000,000 or £5,000,000, instead of £3,000,000. Flax may be grown almost anywhere, and the question should be, Will it pay me better than hops, or corn, or green crops? and not on the inquiry, Would it grow on my farm? We have seen good flax growing on a hill-side 100 feet above the level of the sea, and in the valley upon which we looked down from the hill. In the county of Devon, we have seen taken the fourth crop in succession, and a good average crop too. We have seen it grown in a garden in west Cork, and in a field exposed to the Atlantic in Connaught, and where it

got fair treatment the crop was good, and in every case where the manipulation was carried on as farmers in England and Wales treat their corn, hay, and other crops, it paid a liberal profit.

In Scotland, flax crops are represented very generally in both 1869 and 1870. In the latter year, on the whole, there is an increase, the increase being chiefly in Ayr, Dumbarton, Lanark, Linlithgow, Roxburgh, and Stirling, respectively; Bute, Clackmannan, Inverness, Kinross, Kirkcubright, Nairn, Shetland, Peebles, Ross and Cromarty, Selkirk, and Sutherland, are each blank for both 1869 and 1870, and Caithness, which was blank in 1869, shows 3 acres in 1870. The total quantity raised in Scotland, in 1870, was 1399 acres, as against 1306 in 1869. There are some further interesting particulars in connection with flax culture to which we will probably refer again.

FLAX CULTURE AND FOOD SUPPLIES.

We may dislodge every notion that opposes flax crops because of their scourging effect on the soil; and we may also succeed in establishing the fact, that by the introduction of a flax crop into every rotation, the general results of farming would be greatly more profitable. But we should still have to meet those who say that, by such a change, the supply of food on the farm would be so seriously lessened as to more than counteract the advantage of increased profits. Let us look at the case, however, as it stands, and before coming to a conclusion, consider at least a few points in the evidence bearing on the matter.

We take the case of a farmer growing flax crops chiefly for fibre, and, considering the effects on food supplies of his sowing flax seed instead of wheat or oats, we find that instead of the straw of an acre of grain, he gets about 15 bushels seed, and 4 or 5 bushels husks and dust. The seed is all good for food, and before casting the husks into the dunghill, it may be well to see if something may not be made of a portion of them, over and above their value as manure. But regarding husks as only manure, for the sake of argument, we venture to place the seed for feeding purposes as equivalent to the produce in straw, for like ends, of the best acre on the farm. But supposing the seed is cleansed and made fit for "sowing seed," and the 8 or 10 bushels of such is sold, and its price laid out in food, still we do not fear to ask the most prejudiced against flax crops to compare the stuff (whatever may be selected), purchased for the same sum the seed sold for, *plus* the merely feeding seed, with the feeding prop-

erties or selling price of the largest quantity of straw that could be raised on the acre of ground given to the flax crop. But experience shows that farmers who raise flax crops do not feel any shortness in supply of food as a consequence. Facts, easily ascertained, testify to the contrary. For example, from 1841 to 1861, the increase in value of live stock per square mile in Ireland was under 60 per cent. In Ulster, the flax-growing province, and while flax culture was extending, the increase was 67 per cent. In Connaught it was 64 per cent. In Munster, 54 per cent. In Leinster, 52 per cent. We do admit that a variety of influences may operate to increase or lessen the value of live stock in an area of the size of the respective provinces in Ireland, but we are nevertheless well satisfied that if the general tendency of flax culture was to reduce food supplies on a farm, Ulster could not at once extend the area under flax crops, and feed a proportionately greater number of live stock, on the average, during twenty years, than were fed in the other provinces. But we should rather see American clippers laden inwards with grain to feed live stock, if need be, than to see them carrying chiefly cotton, to keep our textile trades in that anomalous position they now occupy, which is bad for workers in iron, in bricks and mortar, for capitalists and men of science, as well as landowners and farmers. There is, however, another side to the food question in relation to flax crops, which we need only mention to show that it, too, is worthy of more than a passing thought. For instance, if farmers persist in refusing to supply textile trades with flax fibre, they actually force from their own doors the mouths to fill which they feed beeves, fatten sheep, make butter and cheese, and grow vegetables and corn. Better is it, surely, to import corn than export people. Better to feed our own people while raising, and manipulating, and manufacturing flax, than drive them, for want of work, to places from which, if we need it; we could draw food supplies to any extent without loss; whilst to import fibre to the least avoidable extent, is at once to do the worst thing possible to be done, as regards, at least, the most vital side of the food question, in relation to flax crops.

We could sincerely wish to see the British and Irish people imitate, in regard to flax culture, our cousins in the far west, in their bold, praiseworthy, and truly wise ways, in respect to shorthorns. Perhaps, if we allow this matter to take its course, we may find, when it is too late to retrace our steps, that the present had just been the right time to look the matter fully in the face.

FLAX CULTURE AND MANURE MAKING.

It is scarcely fair, in face of agricultural statistics before us, to assume that the farmers of either England, and Wales, or Scotland, are unwilling to grow flax to the extent indicated by the requirements of scientific farming, justified by profitable results. Yet the thing is only done on a very small scale, and till it assumes its proper proportions, it seems requisite to deal with a few more of the imaginary difficulties still in the way. It has been supposed that where flax is extensively cultivated, natural fertilizers must necessarily be scarce; but those who have inquired into the case in all its details, find that no such result is ever found; on the contrary, a skillful farmer always makes his flax growing bring additions to his manure heap, which no other crop, occupying the same ground, could be made to contribute. This will not only appear to be credible, but will also appear as naturally arising from existing circumstances, if we consider the following facts: Take 1 acre of green flax, before it is rippled, to weigh 2 tons, and after it is rippled, $1\frac{1}{2}$ ton. The produce of seed would be about 6 or 8 cwt. leaving the rest for manure, and on the principle that for everything Nature has a place, and anything, no matter what, is good if in its own place, let the waste of the rippling process be made in some way to contribute to the stock of manure, and it surely will do some good. Flax, in the process of retting, loses about one-fourth of its weight, but it leaves that behind in the retting pits, and it only requires that clay, or peat mould, or the shorter "shoves" of the scutching mill be added, to convert this most valuable component of a fertilizer into manure. We need not add, what is too palpable to be overlooked, that where feeding on flax-seed is carried on, supplies of manure always gain as much or more than where food of other kinds is used. But some one may say that though all we have advanced is the case, and admitting it to be quite practicable to make a flax crop the occasion of increasing farm-yard fertilizers, a great amount of care is requisite, and much attention to many things not unlikely to be neglected, become imperatively conditions of these desiderata. If such an objection be made, we avert it by confessing that flax is not a lazy man's crop. We also admit that unless skill and care be brought to bear upon it, it is very liable to go astray. But we do not admit that it is any more difficult to manage flax crops well, than to manage potato, grain, or other crops properly. Still more, we must take leave to say, that before allowing the greater risk arising from the increased value of a flax crop, compared with a grain crop, to be reckoned against it, we must ask that the principle be extended, and a better breed of cattle, sheep, pigs and horses, be also condemned, because that, in the loss of one beast

of the improved character, four or five, or ten times the sum goes that would have been swallowed up if the old and now almost forgotten distortions in the shape of live stock had not been improved from the face of almost every farm in the United Kingdom. We prefer rather to commend flax crops in substitution of grain crops, because a greater amount of capital, more labor, and increased skill, with their concomitants of heavier risks, are required in their production, and we therefore pass no apology for pressing the cause of these crops upon public attention on account of these things.

But there is another light in which the manure question in relation to flax crops must be considered, and it is this, that the class of manure necessary to keep up the ground to a flax-growing condition may be more cheaply produced than is that which a severe process of growing demands, in order to keep the soil fertile. Flax manures need a larger supply of alkalies in proportion to silica or silicious sands, phosphates, or organic matter, and if even the deposits of the retting pit which supplies these be overlooked, they may be readily got from marine plants, and other sources of supply, easy of access and demanding but small outlay. We believe that, viewed from whatever standpoint, the relation in all these bearings of flax crops to the supply of manure, needs only to be considered, to supply reasons innumerable in their favor, as compared with grain crops. Some have supposed that the getting over the difficulty respecting scutching mills is impracticable. We shall only just now say, in regard to that matter, that any one who has attended our agricultural shows, or who knows anything of the enterprising powers of the machine-makers of the United Kingdom, will see that no difficulty exists here, except such as a fancy, unchecked by information, is likely to lead persons of an imaginative mind to indulge in.

THE FLAX CROP.

DIFFICULTIES OF MANIPULATING AND OF MARKETING.

Even where the process is most rudely conducted, the end of agricultural enterprise and labor, which we take to be profit, seems as easily obtained by a flax crop as by any other. The preparation of both seed and fibre, or of either, if one be sacrificed to the other, has been, and is every year successfully carried out on the worst cultivated farms, while the facilities for sale are as many and quite as accessible for flax-seed or flax-fibre, as for wheat, oats, barley, or hops. If the expense of rippling-combs be avoided, and the cost of rippling saved, the flax-straw, in its green state, is got at once into the retting pits; when retted, it is grassed (or

bleached), and if there be no scutch-mill near at hand, the fibre may be prepared for market by hand-scutching. These modes of dealing with seed and fibre are rapidly departing from the ordinary practice of flax-growers. The advantages of leaving the bolls in the flax are, that no risk is run by unskillful rippling, and some say the fibre gains in quality in consequence of the contribution, in the retting process, of the oil of the seed to that of the stalk in making the fibre "kindly;" but its disadvantages are the loss of the seed, and the danger of the stalk breaking of its own weight in handling, or of its being broken in the attempt to knock the bolls off. The chief disadvantages of hand-scutching are the slowness and the greater cost of the process. But suppose it possible for people to have nothing else to do in winter, hand-scutching may be applied instead of mill-scutching, without greatly lessening the gross sum realized for the produce. It is, nevertheless, necessary for successful flax-culture, that scutch-mills should be erected in sufficient numbers, and at convenient distances, so that each farmer may be able to get his crop scutched within four or five months, which seems to be the flax marketing season. The cost of erecting a scutch-mill is small, and the profits arising from scutching for hire, liberal. But where farms are large, as in England and Scotland, each farmer might have a small mill of about three, six or nine stocks, in either of which skillful scutching may be practiced as well as in mills of the largest size. The quantity of flax scutched annually in Ireland is, on the average of the past five years, between 40,000 and 50,000 tons. In 1865, the returns show 64,506; 1867, 39,561; 1868, 40,991; 1869, 35,670, and 1870, 36,615 tons; and this is done by about 16,000 mills, seven-eighths of which are in Ulster. At each of these mills, if necessary, a buyer would attend, but in a general way farmers prefer selling their flax in the open market. But supposing flax growers in England and Scotland could find no market for their fibre in the locality, and that no one attended at the Scotch mills to buy for the spinners, the cost of transit of the produce of an acre of flax from any corner of the United Kingdom, to Belfast, Dundee, Leeds, or to the particular mills direct, which its peculiar quality suited, *plus* agents' fees for selling, and all expenses, would be too small to be worthy of consideration, as an argument against growing it. No such difficulties, however, could possibly exist, for as soon as the farmers of Great Britain would grow flax, spinners would look after it. Besides, mills would be erected for spinning flax in all parts of the country, and several of the purposes now served by calico would be better served by linen. More enlightened modes of manipulating flax than any as yet used, might be adopted with great advantage to the farmer. We could not attempt, in these columns, to give a detailed description of any plan, though we had one ready; yet the largest share

of our confidence is in those which at once separate certain processes now enacted, and join others usually separated. Another idea we have of reform in manipulating flax crops, though we cannot give even the outlines of a plan, is that in proportion as it carries operations into the hands of manufacturers, immediately after the crop is grown, in that proportion is it commendable. Strictly, the manufacturing of flax commences when it is pulled; and, therefore, if the farmer sold his crop green, and if a class of manipulators, undertaking retting, bleaching, and scutching, were called into existence, so much the better for both agriculturist and manufacturer. Dealer to buy flax "on the foot" seen "wanted;" and though some persons in that line have not conducted their trading according to a high standard of mercantile ethics, yet the like has been said of people, and, it is to be feared, justly, in every other branch of business; and still no one supposes that the several callings created in the interests of a division of labour, are to be regretted; nor do we suppose dealing in green flax will be considered an exception. Besides this and like divisions of labour, there seems also a necessity for such combinations as would facilitate the utilization of both "shoves," and "steep water." We do not stake the argument in favour of extended flax culture, or any condition of reform in the mode of manipulation. Nor do we see any impracticability of such extension arising from a want of markets. Still more, we have only to look at matters as they are, to be convinced that if scutching-machines were wanted, as a consequence of flax extension, it would be supplied by the same manufacturers, who have not only met the necessity for improved ploughs and other implements, but have done much to accelerate reform by the introduction, unasked, of new and reformed implements of agricultural operations. Taking the case as it is, there is no insurmountable difficulty in the way of extending flax culture in England, Wales, and Scotland, up to the limits of a scientific rotation, except it be that where soft water is not successful, retting is impossible. But if the waters of the rivers and springs of a locality be hard, the gathering of the rain-fall meets the case, and places this objection alongside the other real or imaginary hindrances amongst the things that have been.

POULTRY RAISING—DIFFERENT VARIETIES.

BY S. H. SEAMANS, WAUWATOSA.

The rearing of poultry is of greater importance than people generally imagine, and should receive the care and attention it deserves, from every one undertaking this branch of domestic industry. The amount of eggs and poultry produced in this country is a matter of estimate only, as statistics in regard to it are very rare; but so far as we are able to give them they will astonish all who have given the subject but little consideration.

The *American Poultry Gazette* gives the following report of the quantity of eggs received in New York City for the year 1871:

Eggs received in New York City for the year 1871.

Month.	No. of barrels.	No. of dozens.	Average whole-sale price.	Total value for the month.
January	11,709	761,085	24c.	\$182,660 40
February	17,108	1,112,020	23	255,764 60
March	63,737	4,143,035	18	745,746 30
April	70,654	4,592,510	16	734,801 60
May	47,829	3,108,885	17	528,510 45
June	51,766	3,370,640	18	606,715 20
July	22,967	1,492,865	22	328,428 10
August	30,152	1,959,880	21	411,574 80
September	23,704	1,540,760	28	431,412 80
October	27,450	1,784,250	28	499,590 00
November	29,264	1,902,160	30	570,648 00
December	17,602	1,144,130	32	366,121 00
Total	414,034	25,912,210	.....	\$5,661,973 85

This does not include smaller packages and those brought in by market-men and others residing in the vicinity of New York, which would undoubtedly swell the amount to over eight (8) million dollars in value. We may safely put down the live and dressed poultry at one-half of this amount, which would give us over twelve millions of dollars as the receipts of poultry and eggs for the city of New York alone.

A recent issue of the *Chicago Times* has an interesting collection of facts in relation to this important subject, from which we quote:

during the year 1853, it was estimated that 175,000,000 eggs were produced, being 175 to each person, while the people in the province consumed 175 eggs per head, during the same time."

Fifty-seven dealers in South Water and Kinzie streets is then the actual number of eggs received by them during the year ending July 31, 1871, amounting in the aggregate to 4,662,500 dozen; to which the estimated receipts of all the other dealers—4,000,000 dozen—is added, making a very safe estimate of 8,662,500 dozen as the receipts of Chicago alone for twelve months.

The Hon. J. Stanton Gould, professor of Agriculture at Cornell University, in an address before the New York State Poultry Society, February 7, 1872, says:

"We shall not go far wrong if we assume that the total value of eggs and chickens annually produced in this State (New York) is at least \$4,000,000. But this does not supply one-half the consumption of New York city alone, which consumes \$8,750,000 worth of eggs annually; the remainder being supplied from the western states. It is also estimated that the value of the poultry kept in the United States is \$20,000,000; and that the value of eggs and chickens annually produced, and consumed in the United States, amounts to \$100,000,000, or five times the capital invested."

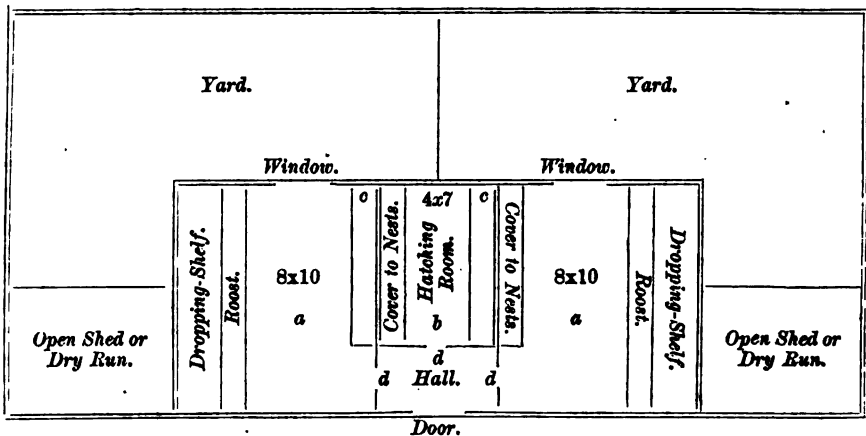
Large as these figures are, and wonderful as they may appear to us, they are doubtless below rather than above the actual amount.

Judging from what we see, in whatever direction we may go, a large portion of this enormous amount of human food is produced under adverse circumstances; not one farmer in ten, on the average, having suitable accommodations for his poultry. Horses, cattle, sheep and hogs have comfortable and clean quarters, but poultry—when properly cared for, the most profitable of them all, for the amount of capital invested—are allowed to shirk for themselves, and in reality are considered a questionable source of profit, probably a nuisance. It is under such treatment, that the question "does it pay to keep fowls" is generally answered in the negative, and for the reason, that those who keep them in this way are entirely unacquainted with the proper care and management of them, and only look upon them as a necessary evil to be endured, because the "women folks want them." Now my experience satisfies me that there is nothing in the shape of live stock reared on the farm, considering the outlay, that compares with them for profit.

In order to reap the greatest profit, they must be provided with the necessary accommodations for their health and comfort. The first requisite is a warm, dry, well lighted and thoroughly ventilated

POULTRY HOUSE.

It need not necessarily be expensive, but should be arranged with special reference to convenience in caring for the comfort and health of the fowls. In selecting a site for your poultry house and yard, choose a dry location, with a southern or eastern exposure, if possible, higher than the surrounding ground, that the water may run off rapidly. A damp location will never do. The soil should be of a porous nature, either sand or gravel predominating. If the right location can be had at the south side of some building that will give it protection from cold winds, so much the better. Be the site where it may, be sure that the floor of your house is higher than the ground outside. Do not make the mistake frequently seen of digging down a foot or so in order to make it warmer. Better by far bank it up when the weather requires it. The floor of your house may be dry earth or gravel, or, if economy is not to be studied, concrete is still better. Of whatever material it may be made, the floor should be kept covered with dry earth, renewed weekly, or oftener, as strict cleanliness is absolutely necessary for profit and the well being of the fowls.



PLAN OF A POULTRY HOUSE.

A house to accommodate, say fifty fowls—which is about the average usually kept by farmers—should contain at least 150 square feet, or three square feet to each fowl. It has been the experience of every one that has entered into the raising of poultry extensively, that fowls will do much better if in small flocks. Two flocks of twenty-five fowls each will prove more profitable than when allowed to mingle as one. The plan given below will be found very convenient, economical and every way desirable—susceptible of various modifications to suit location and re-

quirements. The apartments *a a*, in the plan, will accommodate 25 to 30 fowls each. The smaller one, *b*, is designed for a hatching room, the nests being so arranged that when a hen becomes "broody," the nest box can be turned to open into the hatching apartment, shutting her out entirely from the laying hens, without disturbing her.

The nest boxes should be twelve or fourteen inches square, and ten or twelve inches deep; they should be open at the top, and at one end, excepting a strip three inches high across the bottom end, to keep the eggs from rolling out. A shelf is placed in the partitions *c c* near the floor, upon which the nest boxes are placed; a corresponding shelf is placed above to serve as a cover for the boxes. By this arrangement, they can be removed and scalded or lime washed whenever desired.

The roosting bars should be movable; placed fifteen inches or more from the wall, and ought to be at least four inches in diameter. Large bars add much to the comfort of fowls while at rest, and prevent in a great measure crooked breasts and frozen toes. Under all roosting bars place a movable shelf of sufficient width, and keep it constantly covered with dry earth, muck or plaster. The droppings should be removed every week, at least, and stored under cover outside of the hen house. Be sure and save them all, as there is money in them. The amount of the accumulation during the year, if properly saved will astonish you, and in value is nearly equal to the best imported guano. When composted with muck and ashes, and applied to the corn hill at planting time, the increase of the crop will go far toward supplying your fowls with the corn they will require to carry them through the winter.

Thorough cleanliness must be insisted upon. The inside of the house should be lime-washed spring and fall. I have found a wash made from freshly burned lime, with one quart fine salt, one pint coal tar to the pailful, applied hot and well brushed into the cracks, very effectual as a disinfectant and destroyer of vermin. The yards and runs to each apartment must, in size and shape conform to the "lay of the land," and the ideas of the owner; but of course the more ground they can be allowed to occupy the better for the fowls. Fifty fowls should have not less than half an acre, unless the land is valuable and limited in quantity. The land may, however, be made to pay a good return by planting to plum trees, as the chickens will make short work of the curculio, thereby ensuring generally a full crop of excellent fruit.

A seven-foot fence will confine most varieties; the lower three feet should be tight boarded, this will prevent cocks fighting each other through the fence, and also protect the fowls in a great measure from the high winds.

An open shed adjoining each apartment, under which the fowls can run and be protected, and at the same time have plenty of fresh air during stormy days, will be found a great acquisition, and will add much to their comfort. Under this shed may be placed the dust bath, which all fowls delight in; a heap of ashes and road dust, with an occasional sprinkling of sulphur, answers the purpose well.

FOOD.—Fowls like a change of food. The greater the variety the better they seem to thrive. With variety, should be system in feeding. In the feeding of grain, I approve the use of a feeding hopper, and keeping the grain constantly before them. I am aware this is contrary to the advice of most writers on poultry, but after several years' trial I am convinced it is the better way, being more economical by saving waste of grain. It is better for the fowls, as they will never gorge themselves, as is frequently the case when they are fed from the hand; and it is particularly convenient for feeding mixed grain, as it allows them to select that which suits them best, and to eat at their leisure. The feeding hopper is also a good arrangement for fowls running at large—if kept supplied with a variety of grains, and placed where they can have access to it at all times. Even with a supply of grain, fowls relish a change to soft food, and this should be fed to them every morning; middlings and bran, mixed in equal portions, to be fed when eggs are in demand, and corn and oats for fattening and for growing chickens. All soft food should be mixed up thick or “crumbling” as it can be conveniently with water. It may be improved, particularly for growing chickens, by mixing with milk—sour or sweet. In cold weather mix and feed it warm; and an addition of mangolds or potatoes, boiled or mixed with middlings or ground feed, is highly relished, particularly during the winter. In the spring add a quarter of a pound of sulphur to a pail of soft feed; giving this to the fowls once each week is very beneficial and does much to ward off disease. Give sour milk to drink when it can be had, winter or summer.

Fowls that are confined to their yards should be allowed their liberty towards evening, to range for choice morsels that cannot be found in their pens. This can be done without any detriment to the growing crops, as they will confine themselves to picking up the stray grubs and insects, that the crops can spare as well as not, while “biddy” is made happy. Gravel *must*, at all times, be accessible; fowls must have it, in the shape of sharp stones, broken crockery, shells, or something of this nature, as upon it they must depend exclusively for the proper grinding of their food.

A supply of dried grass, or rowen, should be provided in the fall for fowls to pick at during the winter. They like it exceedingly, and will eat a good deal of it. This is a cheap method of supplying them with

green food during a season of comparative scarcity. It may be fed from a rack made for the purpose, or tied into a snug bundle and hung within their reach.

Whatever the feed of fowls may consist of, let it always be sound in quality, if you would keep them in good health, and have good flavored eggs. Better bury your musty or spoiled grain, than force fowls to eat such trash; remember, that when you are cheating or neglecting your fowls, the loss is yours. It is equally necessary that they should have pure water to drink within their reach at all times.

How can my present stock of common fowls be improved? This is an important question. The answer is, by always saving those for breeders that combine the desired characteristics in the greatest degree, and keep up this selection from year to year, rearing chickens from the best only. To hasten the improvement, procure a cock from some strain of pure bred fowls, that possess in the greatest degree the qualifications you aim to secure. It is always desirable to use only pure bred cocks, if improvement is to be attained speedily. A cross of the large breeds upon common stock will produce chickens at the first cross, attaining nearly the size of the pure breed; also in the increase of the production of eggs, by crossing with a breed of good layers, the improvement is visible in a marked degree at the first cross. Right at this point is where many meet with failure in not continuing to breed to pure bred males, thinking that a fine looking half-blood, possessing all the outward indications of a pure-breed, will answer every purpose; whereas the half-blood pullets should be mated to a pure bred cock of a different strain from the first one, or the improvement will soon be lost.

One of the best varieties to cross with for increasing the production of eggs is the White Leghorn, and particularly so if your flock of hens have size. The Houdan also makes a desirable cross, both as regards the production of eggs and flesh. But be the cross ever so good, one essential point will still be lacking that will take away a large amount of interest that would otherwise be taken in them, which is uniformity. While a flock of cross-bred fowls would hardly be noticed by any one not directly interested in the profit and loss account therewith, the flock that is pure-bred, uniform in size and markings, bred to a standard, will always attract attention; the owner will take pleasure in "showing them up," give them better care, and, as a natural consequence, find them more profitable, even though it be a variety possessing naturally only ordinary merit.

We have not deemed it advisable to go into statistics to show the profit in keeping and rearing poultry, as it varies largely under different circumstances. It may, however, be put down as a safe rule that a hen that

will not afford a net profit of one dollar per year is either not worth keeping or is poorly cared for; while we may note fifty to one hundred per cent more than this as a fair average profit. That the improved breeds are more desirable as well as profitable to keep than ordinary mongrels there can be no question. Among the common "dunghill" there can be found individual hens possessing merit, but they are not plenty, and will not compare favorably with the improved breeds, either in the number of eggs or quality of flesh produced, while the pure-bred fowl will average equal to the best selected mongrel, and have the additional value of uniformity in quality and appearance.

WHAT BREED IS THE MOST PROFITABLE ?

This question, often raised, is still unanswered, and probably never will be, to the satisfaction of all, as no one variety possesses all the requisites of a perfect fowl. Much will also depend upon the accommodations provided; whether the range is limited or wide; whether eggs or birds for the table, or both, are wanted. Poultry men all have their favorite varieties, and vary as much in their opinions as do those engaged in any other branch of business. In giving a brief description of the varieties that have come under my observation during the past ten years, I will enumerate their qualifications, based upon experience, and if it is at variance with the experience of others equally or better versed than myself—as will undoubtedly be the case in some instances—they will bear in mind that results in poultry breeding vary under different circumstances.

Leghorns.—We place this breed at the head of the list. There are several sub-varieties varying from each other little, except in color—but our preference is for the white variety, as more attention has been given to their perfect breeding than the others, the Dominique, blue, red and mixed or splashed. They are a good table fowl, medium size, very hardy, in fact will endure as much hardship as any fowl we have. They are great layers of medium sized eggs, equaling in number any other variety, not excepting the famed Hamburgs, while their eggs are larger than those of the Hamburg. Their characteristics are pure white plumage, yellow legs; face, wattles and comb, bright red; ear lobes, pure opaque white; the comb of the cock standing perfectly erect, while that of the hen falls over, sometimes covering one side of the face. They are known as a non-setting variety, but occasionally one shows a desire to set, but can be easily broken up; if allowed to set, however, will generally do well, and take excellent care of her brood. Chickens are very hardy and will feather quicker than any other variety; mature early; cockrels will crow under six weeks from the shell; pullets with good care will lay at

four months of age. I consider them one of the very best varieties ever introduced. Though originally an imported fowl, the care with which they have been bred in this country for several years past, has given our present strains the distinction of being an American breed, and they have become so popular that several exportations have been made to England.

Dominiques are another "Yankee production" and are deservedly a very popular variety, and becoming more so every year, as their good qualities are better known. Their plumage is a light ground, shaded to a soft, slaty blue; legs yellow or dusky yellow; combs are either double or single, though the preference is generally given by fanciers to the rose comb. They are decidedly a farmers' fowl, being good layers, setters and mothers; above the medium size; very plump, full breasted; easy keepers, good foragers, and very hardy. Chickens mature early, and are always in good condition to kill. Taken all in all, they come as near being a perfect fowl as any we have, and are fast coming into general favor.

Black Spanish.—This variety is too well known to need any comments. As layers of large, white shelled eggs, they are not excelled; comparatively hardy; of beautiful metallic, green-black plumage, and stately carriage. They are favorites with many, but we consider them much inferior to white leghorns.

Hamburgs.—Where eggs are desired, without regard to size, Hamburgs will fill the bill. Their eggs are small, requiring nine or ten of them and sometimes more to weigh a pound. They are very ornamental, under medium size, non-setters; chickens tender and rather difficult to rear, but when grown, very hardy. There are several sub-varieties, known as silver-spangled, silver-penciled, golden-spangled and penciled and black. The silver-spangled are generally considered the most beautiful, while the black are the largest, and laying the largest eggs, are by many considered the most desirable.

Polands may be classed as an ornamental as well as useful fowl. There are also several sub-varieties of this breed, known as the white, white-crested, black, silver-spangled and silver-penciled—all of which are beautiful birds, and first-class layers, but seldom desiring to set. The preference is generally accorded to the white-crested black variety.

Dorkings are the fowl of all England, and with Englishmen are a great favorite. There is no question, but they are a fowl of great merit, being among the best of table fowls; of large size; maturing young; easy keepers; good layers of fair sized eggs, and first class as setters and mothers. The principal sub-varieties are the White, Gray, Silver-Gray and Speckled; the Grays and Speckled are the largest, and rather more

hardy than the Whites. They should all have white legs and feet with five well formed toes on each foot; may have either single or rose combs though preference is generally given to Grays with single, and White with rose combs. We do not hesitate to recommend them as a valuable farm variety where they can have plenty of range.

Game Fowls—No variety of the poultry kind, has been bred with more enthusiasm than game fowls. They are supposed to be the most ancient of all domestic fowls, and of all breeds, are considered the most perfect and beautiful. As a table fowl they stand at the head of the list; are only ordinary layers, but the best of setters and nurses, and will defend their brood against all intruders. They are not, however, a desirable fowl for general use, owing to their pugnacious disposition; the young cocks keep up a continual warfare with each other in preference to preparing for the gridiron. The most popular varieties, are the Black Breasted Red, Brown Breasted Red, Duckwings and Pyles; these are generally the "Oup-birds" at the English exhibitions. There are also sub-varieties of the above, too numerous to mention in this article. All however possessing very similar characteristics.

Houdans are without doubt the best of all the French varieties introduced into this country, and are certainly a great acquisition. In an experience of five years with them, have never known one to show any sign of a desire to incubate. As to their good qualities, I cannot do better than copy from the description of Lewis Wight, in his valuable work on poultry; a book which should be in the hands of every breeder and lover of fine fowls. "This fowl, in many respects, resembles the Dorking, and the Dorking blood has evidently assisted in its formation. We believe that a cross between the latter and the White Poland would not be wide of the mark. Houdans have the size, deep, compact body, short legs and fifth toe of the Dorking, which in form they closely resemble, but with much less offal and smaller bones. * * * * In weight, the Houdan is pre-eminent among the French breeds. We feel certain that by breeding for this most useful quality, the fowls may be reared to a greater weight than even the colored Dorking. Imported (from France), Houdans frequently want the fifth toe, evidently derived from the Dorking; and it might at this early period be easily bred out. * * * We have in this breed the size, form and quality of the Dorking, with earlier maturity. The hen is a most prolific layer of good-sized eggs, which will almost invariably be found fertile. The chickens feather rapidly, but are nevertheless exceedingly hardy, perhaps more so than any except Cochins or Brahmas (and White Leghorns), and therefore are easily raised with little loss. They are emphatically the fowl for a farmer, and will yield an ample profit on good feeding, both in eggs and flesh." I will only add,

to cross with common fowls, the cocks cannot be surpassed, and particular the cross with Brahma hens, which will result in a fowl of rare excellence.

Brahmas—Light and dark varieties are the most desirable of the Asiatics, as well as the most valuable of the many varieties yet introduced. Except in marking they are very similar in their characteristics. While, as a mere matter of fancy, we prefer the *dark* variety, others, for a similar reason, prefer the light. They will bear neglect, confinement, and being heavily feathered can stand the cold better than any other fowl. Early hatched pullets, with good care, will furnish a bountiful supply of eggs through the winter; in fact, as winter layers, no breed equals them. As a table fowl we prefer them to the Cochin, but they are not equal to the Dorking, Houdan, Dominique and some other varieties. For early market chickens they are unequaled by any for profit.

Cochins—May be called the originators of the mania, or “hen fever” that raged from 1847 to 1850 and ’51, when fortunes, almost, were spent in procuring them. Even within the past two or three years, larger prices have been paid for birds of this, than any other variety—over three hundred dollars has been paid for a single trio, consisting of a cock and two hens—and yet the introduction of this class of fowls has been of immense value to the poultry stock of the country, for wherever there has been an infusion of this blood a great increase in the size of the progeny has been the result. The mania, absurd as it undoubtedly was, has done good service by awakening a more general interest in the whole subject of poultry:

That Cochins have real merits does not admit of a question. They are hardy; chickens easily reared, though slow in coming to maturity. There are four varieties of them, partridge, buff, white and black—all having the same general characteristics, varying only in color. Our preference, however, is for the partridge color, owing to having had better success with them, and their plumage not fading like the buffs. Cochins are, however, inveterate setters, it being very difficult to break them up when once they get fairly “stuck” to the nest.

Bantams are the most beautiful of the poultry kind, and are an admirable acquisition to the list of pets. Though their eggs are small, they lay a large number. We look upon the game varieties of Bantams with the most favor, as embodying the largest amount of impudence in the least compass, which seems to be the great aim of their existence. The varieties are the same as of the larger game. Of all varieties of Bantams the productions of Sir John Seabright stand first; showing what may be accomplished by close and prudent application to the principles of “breeding for a purpose.”

Ducks.—Few farmers realize the value of a good variety of ducks upon

the farm. With a good range, and a running brook ducks can be reared cheaper, pound for pound, than any other meat. We would select either the Rouen—a gray duck of French origin, or White Aylesbury—a white duck of English origin. Birds of these varieties weigh eighteen to nineteen pounds per pair at maturity. Our preference is the Rouen, as they are more hardy and mature with me sooner than the Aylesbury. Under different circumstances the case might be reversed. In plumage, the Aylesbury certainly has the advantage. Ducks should never be allowed to lodge in the same house with the chickens, but should have a separate apartment with a stone, brick or cement floor if possible, which should be frequently washed “down.” Ducks should always be shut in their house at night during the laying season, as they lay their eggs in the morning, and frequently drop them in the water while swimming, if this precaution is not taken.

The Black Cayuga duck is considered by many equal to the above named varieties, but such has not been our experience.

TRANSPORTATION OF EGGS FOR HATCHING is now attended with good success when properly packed, affording a cheap and convenient method for disseminating pure-bred and choice fowls to any part of the country.

We have known hundreds of instances where eggs have been sent over a thousand miles by railroad, and hatched a large percentage. In fact, some of the best breeders of this country take this method to procure the best blood to be found in England, to improve their stock; eggs frequently hatching as high as seventy-five per cent, after crossing the ocean. Of course there is a risk in it; so there is in hatching eggs procured on a farm; failures are of frequent occurrence there also. The outlay is however not a large one, and if you get eggs from a reliable breeder and from the same stock he breeds from himself, you stand an equal chance of getting the best birds.

We look upon the improvement of our poultry stock as yet in its infancy, and hope to see an increase of interest in this department at the fairs of our agricultural societies. Whatever variety you breed, keep it pure and strive to excel; exhibit your birds, and compare notes with other breeders, thereby getting “posted” upon the points and requirements for a first class fowl. We trust too, our State Agricultural Society will give this department better accommodation in the way of a building in which to exhibit the stock, and also in the selection of judges

There is little encouragement, for exhibitors, if judges are selected who know nothing of the points of a pure bred fowl and the requirements of the standard, or are forced for want of time, to judge hastily, and often incorrectly.

ESS AT THE OHIO DAIRYMEN'S ASSOCIATION,
IN WELLINGTON, JANUARY, 1872.

BY X. A. WILLIARD, A. M.,

Of Herkimer Co., N. Y., Lecturer in Cornell University and in the Maine State Agricultural College; Author of Practical Dairy Husbandry, etc.

I am pleased to meet the dairymen of Ohio at this great center of your interests, at one of the largest, if not *the* largest country cheese market on the continent. The building up of a cheese market of such magnitude as this must have required great activity and energy on the part of your commercial men, an amount of labor, an expenditure of capital, an anxiety and risk in properly placing your goods in the market, that is very seldom appreciated by those who have had no experience in this department of labor. I have seen our market at Little Falls grow up from small beginnings, know something of its advantages, and I am glad to see such markets established in other places, because they are of the utmost benefit, not only to the farmer but to the whole country. I have seen Ohio cheese abroad in New York city and in other places, but I must confess I was greatly astonished at the really fine quality of your cheese shown to me yesterday by Mr. Horr. I shall go back to New York better informed as to the standard of your goods than I was before coming here.

But, while I wish to give you due credit, I do not wish it to be inferred that you have reached a point beyond which no improvement can be made, far from it, but rather that you have the material, both in respect to the genius of your manufacturers and in the character of your soil and climate, to make boundless progress in this department of industry. I am glad that it is so, for I feel earnestly for the improvement and progress of American dairying everywhere.

VALUE OF THE MILK CROP.

The annual milk interest of the United States may be expressed by the following formula: 1,800 quarts of milk at $2\frac{1}{2}$ c. per quart = $\$42 \times 10,000,000$ cows = $\$420,000,000$.

The 1,800 quarts represent the average annual yield of a cow during the year. If we put the milking season at 300 days, the average yield would be at the rate of six quarts per day. The 1,800 quarts would make about 360 pounds of cheese, or say 150 pounds of butter.

We have statistics showing pretty nearly the value of the milk crop of the United States, in items, as follows :

Milk consumed as food, at 2½c. per quart.....	\$213,000,000
Condensed milk.....	1,000,000
Butter product, 700,000,000 lbs., at 25c.....	175,000,000
Cheese product, 240,000,000 lbs., at 12c. per pound.....	28,800,000
Value of whey and sour milk from cheese and butter manufacture, converted into pork and calves.....	10,000,000
	<hr/>
	\$427,800,000

A value very nearly that expressed in our formula.

Commissioner Wells, in his report on the commerce and industry of the United States in 1869, estimates the annual value of the products of the dairy, after deducting the value of products consumed on the farm, at \$400,000,000. He believes that his estimates fall considerably within the mark, and in proof of this assumption he instances the dietary of factory boarding houses, where the operatives were in a large part French Canadians, notoriously frugal and simple in their habits, and in which they were furnished to their own satisfaction, which showed an average consumption of butter amounting to about \$16,51 per year. An average consumption for the entire population taken at one half this sum or \$8,25 per head would result in the expenditure on this account of \$321,000,000.

The consumption of milk to the value of one cent per day for each person would give an additional sum of \$143,350,000 making a total of these two items of \$464,000,000.

Any one who is acquainted with the manner in which milk, and more especially butter, are consumed in the families of American laboring men as well as in the houses of the wealthy, and well to do classes, will acknowledge that these estimates are low. These enormous values are to be disposed of annually, and it is a matter of interest to dairymen to know where they are placed. Nearly the whole bulk of our dairy products is consumed at home: for if we refer to official statistics we find that about 60,000,000 pounds of cheese, and about 7,000,000 pounds of low grade butter, much of it known under the name of *grease*, go abroad. The value of our entire surplus in dairy products may be put at the following figures

60,000,000 lbs cheese, 12c	\$7,200,000
7,000,000 lbs butter, 25c	1,750,000
Condensed milk	500,000
Total	\$9,450,000

An additional expenditure of 24 cents per year for each person, or two cents per month in any form of dairy product would wipe out our surplus and leave nothing to go abroad.

Our cheese product, the past year has been sold exceedingly low, and the best informed commercial men tell us, that it is likely to be low in price for a series of years. It is a matter then of some account to devise means by which the dairyman may relieve himself from this very serious trouble which threatens him. It is believed by many that the cheese product of the United States at the present time is no more than is annually needed for home consumption, provided the consumption be distributed properly over the year. It is estimated that we have 30,000,000 of people who would consume cheese were it of unexceptional quality and conveniently supplied. Say that each consumed 8 pounds a year at a cost of fifteen cents per pound, or \$1.20, and our whole product would be consumed. At this rate one cheese of sixty-four pounds weight would supply a family of eight persons for the year. Eight pounds a year would be at the rate of about two and a half ounces a week—a small item surely, considering that some men not unfrequently make way with a half pound or more at a meal. I am more and more convinced that it is upon home markets that we must rely in obtaining a fair compensation for our products. There are hundreds of villages in the United States where it is impossible to get a pound of good cheese from one end of the year to the other. We need to introduce among us the English system, where every village has its cheese store, and where customers can be supplied with variety of styles and qualities, small cheeses as well as large. People cannot be expected to buy cheese unless it can be conveniently had, and in such form and quality as will suit especial wants and tastes. The American system of depending upon a foreign market, and forcing forward immense stocks in hot weather is a vicious system, and must always prove more or less disastrous. Let us reason upon this matter without any absurd theories or speculations. I shall appeal only to your common sense for a practical solution of the question. I affirm the factory system of curing cheese and marketing in hot weather is grossly defective, is a shameful waste of the hard earnings of dairymen.

WHAT ARE THE FACTS?

The great bulk of the factories in the United States and in Canada have no conveniences for curing cheese properly, and have no provision for accumulated stocks. The cheese curing process is one requiring skill and attention to details second only to the manipulation of the milk. The fundamental principles in this department are almost entirely over-looked and ignored by the cheese makers of this country. From the time the cheese goes from the press to the market, it is left to take its chances with the weather, and its quality, when produced from good milk, varies precisely as the weather happens to approximate to a certain uniform temperature. A temperature science verified by practical experience has demonstrated to be the true range of heat for producing fine cheese. We now know that the whole art of cheese making consists in the proper development of a peculiar species of fungi, and that the trouble in cheese making also arises from another class of fungi, more or less vicious in character, which gets possession of the milk and curds, or the cheese upon the shelf, overmastering the first-named organisms, which are the cheese makers' real friends. Their action is altogether harmful, and according as they have been allowed to develop and take possession of the cheese is the product inferior, poor, bad or worthless. Now, the useful class of fungi must have a temperature favorable to their growth and development. The cheese makers' art is to mould them to his will, to induce them to perform a specific office, to attack the casein or nitrogenous elements of the cheese and to break it down into a mellow, plastic state, without doing injury to flavor; in fine, to prepare it in the best form both as to healthfulness and taste for the human stomach. This, under certain conditions, it will do with mathematical precision and certainty. You know how plants and animals are moulded to do the bidding of human intelligence; how Bakewell produced his sheep; how Colling, and Bates, and Booth have made their Shorthorns? How the pomologist has changed the sour and bitter crab into the large and luscious apple.

You see how even inanimate nature has been made to do our bidding. How water in the steam engine has become the great propelling power of the world; how lightning chained to the telegraph has been made to talk. God has given us unbounded limits of power over animate and inanimate matter, providing we employ the immutable law that governs it. So this minute microscopic fungi, under the hand of intelligence, will do our bidding in the cheese vat and upon the cheese shelves, if we understand and apply the law, which the All Wise Creator has laid down for the government of its being. Now to obtain the best results, the growth and devel-

ment of the fungi (or in other words the fermentation of the cheese) must be uniform and continuous. You cannot induce excessive activity one day, followed by a cessation or checking of the process the next day, and so on, and obtain a high standard product.

CURING HOUSES.

Cheese made from good milk and with only ordinary skill in manufacture, when placed upon the shelf in a well ventilated cheese curing house, and kept in a uniform temperature of 70° to 75°, will almost invariably cure down fine in flavor and quality. The action of these fungi (call it fermentation if you choose) is peculiar and not yet fully understood. Certain it is, however, that they have the power of converting casein into fat, or a substance similar to fat, and hence by attention in curing, a cheese made from milk partially skimmed may have as mellow and meaty an appearance and taste as whole milk cheese cured in variable temperature. This is a fact abundantly proved by science, and has been fully demonstrated by the analysis of Voelcker. This peculiarity in the manufacture and curing of cheese was brought to my notice in 1866, during my examination of English dairies. Mr. Harding, the distinguished exponent of Cheddar cheese making in England always insisted that the goodness and delicate flavor of the cheese depended as much upon the temperature and manner of curing, as upon any extra manipulation in making. He affirmed that by keeping the temperature of his curing room at 70°, without variation, he could remove a considerable portion of cream from the milk, and then be able to make a cheese that would sell in the London market for the highest price. It was his usual custom to take the cream from the night's milk, and I have never seen or tasted cheese more perfect in flavor, or with more of the characteristics of what we term "fine cheese," than that which I ate at his table. His curing room is surrounded with a nest of iron pipes, which are supplied with hot water from the boiler below, whenever the temperature of the curing room falls below 70°. In the low, even temperature of England, his curing room, built in with heavy walls of hollow brick, and with ample provision for ventilation, seldom varied in temperature from 70°. I have experimented sufficiently in my own dairy to know that with good milk and with a good curing room kept at 70° to 75° there is no necessity for bad flavor, and that cheese can be kept from one year's end to the other, and retain that mild, rich, nutty taste which the English so justly characterize as the best manufacture. I feel in earnest about this matter of curing cheese, because I am convinced its neglect is the great fault of American factories. The complaint is quite common that American cheese will not

keep. The secret of long keeping cheese is not so much in its manufacture as in the milk from which we make the cheese and in its curing. Our dairy-men complain that prices are low and are seeking for a remedy. The remedy lies in better milk and in larger and better curing houses.

In New York there is not a single factory within my knowledge that can hold cheese over in hot weather and retain its flavor. Even under our system of weekly sales immense quantities of July and August cheese is overheated and tainted in flavor when it leaves the factory. Then there is not one factory in a hundred that can hold more than six or eight weeks' make of cheese. You hear of immense shipments of cheese in hot weather and at low prices. Well, the factories are *forced* to sell. They say, "we dare not keep it, for it is beginning to turn in flavor, besides our rooms are full and it must be sold." Now is it any wonder that dealers buy low and that dairymen are placed at a disadvantage? Why, my friends, you and I and everybody else will buy as cheaply as we can. Has it not become a proverb that "you cannot realize the full value on forced sales?" Now this is the condition of the American cheese market during a large part of the year and England knows it, and our own cheese dealers know it. But the dealers after purchasing are anxious to get rid of the goods quickly, especially in hot weather. They have an article upon their hands which they know is constantly depreciating, and is liable to be lost altogether, and so they shift the responsibility as soon as may be, making what margin they can. It is known that much of our cheese will not keep, and shippers are on nettles until they clear their warehouses of stocks as fast as they come in. It is this over anxiety, this hot haste to have our product change hands for fear of loss that brings prices down. You will observe that English Cheddar holds its own at 76s to 80s the cwt., year after year; why? because it can be held a long time without depreciating.

Oh, my friends, I sometimes feel tired and discouraged in talking to people who have no eyes to see and no ears to hear. It takes such a long, long time for men to get out of the old and deeply worn rut. Life is so short and it seems to be such a waste to be always plodding—plodding along in a palpable error.

HOW TO IMPROVE CURING ROOMS.

But you will ask, in what way can curing rooms be improved, and in what way can the buildings already erected be utilized? In the first place, whenever possible I would have a cellar under the dry house; I would have it six or eight feet below the surface, the walls rising above the ground two or three feet, or of a height sufficient to give an abundance of sunlight throughout the whole basement. I would have this

room 10 to 12 feet high in the *clear*, and the bottom should be thoroughly underdrained. Then the floor should be grouted and covered with cement or flagging, so that no leakage or accumulation of slops is possible. Ventilators with wickets should be arranged leading to the rooms above or to the roof. Such a basement would add very much to the capacity of the dry-house, and by attention to drainage and ventilation, may be kept at a low temperature during hot weather. It may be provided with hot water for heating if necessary, the pipes connecting with the boiler so that heat may be supplied at any time with little expense. Here I would place a part at least of the cheese made in hot weather, and all such cheese as could not be readily marketed at a good price. Supposing every factory had a cool place for storing but 200 cheeses in hot weather, the quantity in the aggregate would be very considerable.

There are over a thousand factories in the State of New York alone; say that there are 1,500 in all that can store 300 cheeses each, above present capacity; the gross amount would be 27,000,000 pounds. This amount kept from the markets in hot weather—safely kept with no fear of deterioration but retaining its flavor, and growing better in quality—would so relieve the trade that good prices would probably result on that shipped. *I would not advise the keeping of cheese at any time when fair living prices can be obtained for it.* Then I would adopt the Crosier plan of leading the cold air from the ice-house. In this plan two conductors go down from the upper part of the ice-house. They are made of boards eight inches wide and an inch thick, with holes bored in them. The holes allow the cold air to enter from the ice, and it pours in a stream from the mouth of the tube into the room. The temperature of the air as it comes out at the mouth of the tubes is about 35 deg. With thick walls and with high windows, he is able to lower the mercury to 62 deg., and even lower in the hottest July weather.

Sometimes he closes one tube to keep the room from growing too cold. The draft is strongest in the hottest weather. By this arrangement, and the hot water pipes, the desired temperature may be secured the season through. I do not pretend to give the best plan for securing an uniform temperature; I give that which is comparatively inexpensive, and which has been found to be practicable, to show you that such an arrangement is within the reach of every factory; and that this matter of controlling temperatures is not so difficult as dairymen have been led to imagine. By this simple arrangement, probably, the room immediately over the basement, (if outer walls were properly constructed) could also be made cool enough in hot weather. I would have every factory have a store-room sufficient to hold all the hot weather cheese, so that at no time to be forced to sell on account of room.

Now, I have tried to show you some of the advantages that would result in curing cheese properly and in having sufficient store-room to hold a certain amount of hot weather cheese during hot weather. Let me illustrate how this course would be likely to affect the market. In the first place the quality and flavor would be improved. In the second place by withholding a portion of your stock, and not crowding the market at a time when the hot weather makes it a fearful risk for dealers to handle large quantities, you will be able to maintain a price for what you *do* sell. This is a natural consequence and is one of the laws of trade. By pushing your whole product forward the risk and the glut in the market, forces prices down, as it has the past year, to 11 and 12 cents. But suppose you hold back a third of your make, selling two-thirds at increased rates, or for what it is worth, say 16c. Take 300 pounds of cheese for instance as an illustration. The 300 pounds at 11c. would be \$33,00. That represents the present system. But if you keep back 100 pounds selling the 200 pounds at 16 cents you have \$32,00, or within one dollar of the receipts first named, and the 100 pounds remaining back. In other words the 100 pounds remaining in your curing room if sold at one cent per pound would bring you out even with sales made according to the first system. This is the English plan. They do not force forward their goods in hot weather when they *must* be sold at a sacrifice on account of depreciation and decay from heat; but they sell only so much as will go freely into consumption at a good price.

GOOD MILK.

I have said that one great fault in American cheese-making to-day is in the curing of the cheese. I have said that with proper attention to curing, and with only ordinary skill in manipulating *good milk* a first class product can be made, and I reiterate the affirmation, but I wish to call attention to that part of the affirmation expressed in the two words "*good milk*." We have a great deal of talk in New York about "fancy cheese," and high skill in cheese-making. Some factories have a great name in this respect, and the cheese-makers who manage these have an exceedingly high reputation. They command high salaries and are eagerly sought after. Cheese-makers from a distance frequently come to visit these noted factories to learn the art of making "a fancy product," and they do learn it, but when they go back to their own factory and commence practicing upon their learning, they not unfrequently fail to make any better product than before. Again, sometimes, a fancy factory, with its skilled manager suddenly falls into the back ground. Dealers say "he is off the track," and patrons complain that the cheese-

maker is getting careless and negligent. Ah! my friends, this cheese-making business is a serious thing at times, I can assure you, and especially so when one "gets off the track" without knowing where the trouble lies, and lies awake at night and does all in his power to get back again. And then to hear disparaging remarks, and the grumbling of patrons about being beaten in sales by a neighboring factory. I have seen such things a great many times and I have felt a sympathy for these men in their troubles, because I have known that often they are not to blame. No. When an experienced cheese-maker is attentive to his business, "and gets off the track," his trouble generally comes from imperfect milk, unsuspected at the time of its delivery at the factory. I do not mean imperfect milk resulting from want of cleanliness and the general care of milk after it is drawn from the cow; that matter has been discussed from time to time at our dairy conventions, and farmers ought to be pretty well informed upon the evils coming from such filthy practices. Dairymen, it is true, are not generally up to the mark in this respect, for there are vast quantities of cheese every year injured on this account. But you will understand that among the "gilt edged factories," this matter of cleanliness is becoming more and more rigidly enforced among patrons. Now, the question upon which I desire to call your attention, is concerning those causes of bad milk lying back of these common and flagrant ones. The dairyman may be one of those fastidiously neat men, who takes pride in having everything neat and clean about the dairy buildings in respect to his milk. Now it is difficult to convince such a man that he is delivering bad milk; and the cheese maker at the time of receiving it at the factory may not even be able to detect, or even have cause to suspect its being bad, but nevertheless it is bad, and becomes the means of getting the cheese maker off the track.

Perhaps the most prolific cause of bad milk in such instances, results from the cows drinking the water of stagnant pools, tramping through swails of mud which are alive with filthy organisms of decomposing vegetable or animal matter. I need only to refer you to some facts coming under my own observation, and the result of scientific investigation by Professor Law, of Cornell University, to show you how milk may be spoiled while the dairyman suspects nothing wrong.

INHALING BAD ODORS.

Experience and scientific investigation have established the fact that milk is spoiled in the cow's bag, simply on account of the cows inhaling bad odors while at pasture. We have numerous instances where deaconed calves thrown out and left exposed in a portion of the pasture—

where dead horses, and the carcasses of other animals have been allowed to putrify in such places that the cows inhaling the stench from these decaying remains of animal matter, the milk has taken a putrid taint before being drawn from the bag. This taint may not be perceptible the moment it is drawn any more than the physician can detect small-pox in a person who has recently been exposed to that disease, but the seeds or germs of putrification may be there nevertheless, and, in the case of the milk, begin to show themselves, and to give trouble to the cheese maker, before his curds are ready for the press. Or if he succeeds in getting the curds in press without much difficulty, the cheese not unfrequently shows an early taint, decays quickly, and turns out bad. The troubles from this source are much more frequent and produce more extensive evils than are commonly supposed.

MILK TAINTED BY DUST AND BY BAD WEATHER.

I have seen numerous cases where the milk has received a taint from particles of dust falling from the cows into the pail while milking, and unsuspected of doing harm by the milker. Cows that are allowed to pass through sloughs of mud, places filled with decomposing animal and vegetable matter, get their udders and bodies more or less bespattered with this filth. At the time of milking this dirt has become dry, and the more bulky portions may have fallen off, but enough remains to form a dust which, in the process of milking, enters the milk and thus the seeds of a filthy decomposition are sown. You may not be able to detect anything bad in such milk for an hour or so after milking, or when it arrives at the factory, but it is nevertheless bad and will cause trouble, either while the milk and curds are being manipulated, or in the flavor of the cheese upon the shelf. Farmers generally have not understood or appreciated these things. They have been looking wholly to the art of the manufacturer for securing a good product, assuming so long as milk can be got to the factory before it sours, or before it becomes rotten or stinks, all responsibility is shifted upon other shoulders than their own.

And in this connection I must refer you to two notable cases illustrating the point in question. In the summer of 1870, while on a visit to Mr. L. B. Arnold, of Tompkins county, New York, I saw an instance of dust innoculating milk brought to the factory. When the milk was received at the factory window, there was no reason to suspect taint from any particular dairy. The delivery from the several patrons went into the vat together, and was set in the usual manner with rennet. But during the process of heating up the curds a most intensely foul and disagreeable odor was emitted. The cheese maker sent for Mr. Arnold and myself

and we went down to the factory together. We found the curds, then about half scalded, giving off a stench exceedingly offensive—a smell like that coming from a nasty mud-hole stirred up and exposed to the air in hot weather. There was no mistaking the peculiar odor, and I suggested at once that some of the patrons were allowing their cows to slake their thirst from stagnant pools. He afterwards traced the milk to its source and found the trouble to come from one patron, who, after turning his cows to the after feed, had allowed them to cross a narrow slough where particles of mud adhering to the udder and hair, and becoming dry, the dust entered the milk during the milking, and had introduced a class of fungi which by their multiplication spoiled the milk. The patron had meant no harm. He had taken every precaution so far as his knowledge extended for the delivery of good milk, and on correcting the fault the trouble ceased. Another case is in point, and which occurred the past summer, 1871. Prof. Law, of Cornell University, gets his supply of milk from a milk-man. One day during the hot weather he observed a peculiarity in the cream rising on the milk furnished by the milk man. It appeared to be ropy, and on subjecting it to an examination under a powerful microscope, it was found to contain a large number of living organisms in different stages of growth. Pushing his investigations further, the Professor called upon the milk man to inquire concerning the management and keep of his cows, and the manner in which the milk was cared for. Here he found, on looking over the premises, that the cows, for lack of good clean water—the season being unusually dry—were forced to slake their thirst in a stagnant pool located in a muddy swale. Taking specimens of this water and examining it under the microscope, the same class of organisms was found as those in the milk. It was now pretty evident where the cause of the trouble lay; but to make the matter more clear, specimens of blood were taken from the cows, and examined under the microscope, when these also were found, to contain the same class of organisms.

The animals, on applying thermometer tests for determining health and disease, were found to be hot and feverish, thus showing that these living organisms introduced through the medium of the filthy water and taken into the circulation, and by their power of reproduction and multiplication in the blood, became the source of disease. Investigating still further, a particle of the filthy water was introduced into milk free from such organisms, and known from tests to be in good order, and in a short time the same filthy organisms multiplied and took possession of it in vast numbers, producing the same character of milk as that first noticed. Other experiments and investigations were made, but all similar in result to those I have described.

These facts are of very great importance to dairymen, and although it was known that the milk from cows drinking the putrid and foul water of sloughs and mud holes had caused much trouble at cheese factories, still dairymen hardly appreciated the full extent of the trouble or were aware of the precise nature of the injury caused by such water. If the lives of those foul organisms are not destroyed when taken up by cows in their drink, but pass into the circulation, tainting the blood, entering the secretions and establishing their filthy abode in the milk, there to increase and multiply in vast numbers, causing the milk to be a mass of filth; then it is reasonable to suppose that persons partaking of this milk, even when freshly drawn, are liable to have their blood also inoculated and thereby contract disease. Who can say that malignant fevers and fatal epidemics do not often originate from these sources? The facts brought out in these investigations would seem to warrant the supposition. At any rate they are sufficiently startling, and should arrest the attention of those who have the care of milk stock, and who are in the habit of using milk freely. They prove that clean water is at least a prerequisite for the cow to yield good, healthy milk, and that there is more danger in allowing stock to slake thirst in foul, stagnant pools, than has commonly been supposed.

In my report upon English Dairies in 1866, made to the American Dairymen's Association, I called attention to the character of English milk as cleaner than ours, and I attributed the finer flavored cheese of England, in a great measure, to this one cause. Nothing struck me with more force than the care taken by the Cheddar dairymen of Somersetshire to get good milk. The pastures are well drained and provided with an abundance of clear, running water. There are no filthy pools or mud-holes where cows are allowed to tramp and wallow in search of water. The milking sheds are open on one side, paved with stone and cement. There is sufficient incline back of the cows, so that all the filth flows into the stone gutters, and after milking, all the droppings are removed and the floors and gutters are flushed with water, so that everything is clean and sweet for the next milking. The liquid excrements and washings are conducted into a tank sunk into the ground, outside the milk-house, and from thence as occasion requires are applied to growing crops. You will see that under this system of clean pastures, clean stables, and clean dairy-houses, a better milk is obtained than with us, and thus with proper attention to curing cheese on the shelf, the Englishman with less skill than ourselves in cheese manufacture is enabled to make a superior product.

I am convinced that unless the dairymen of America commence at once to pay attention to cleanliness in pastures, not only in regard to slough

holes, but the eradication of weeds, providing stock with an abundance of fresh, clean water, together with attention to curing cheese, European manufacturers will soon outstrip us in the race "for making fine goods." The factory system is now being established in Europe. All our inventions and appliances are eagerly sought after and every good thing discovered by us adopted. England, Sweden, Germany, Russia, Holland and Switzerland are adopting our factory system. Under monarchical governments and hereditary land-tenures like those of Europe, the farmer is compelled by his landlord to farm in certain directions, and the result is a systematic regular course of husbandry by which better results are obtained than with us, where every farmer does his work in a hap-hazard way without any regard to science, or a rational system of culture. Dead carcasses exposed to the air to putrify, cess-pools reeking with filth, stagnant water filled with decomposing vegetable matters, are regarded as public nuisances, and those permitting them on their premises are liable to criminal prosecution.

Now in regard to milk, we are no longer left to grope along blindly in the dark. Hallier, Pasteur, and a host of other distinguished investigators have, with the aid of the microscope, demonstrated how milk is changed from its normal condition by fungi—how these minute organisms emanating from filthy matter get possession of the milk, and convert it into a state similar to that substance from which they emanate; and it is from this standpoint, established as a truth by scientists, that American dairymen must base their operations. The trouble heretofore has been that we had no sufficiently established starting point. We were experimenting with the *effect*, without understanding definitely the nature of the *cause*.

But now, clearly understanding the cause *and* its effects, we can apply the remedy. I have no doubt the terrible disease known under the name of "milk-sickness," so prevalent in Indiana and other parts of the West in hot weather, will be traced to certain species of fungi in the milk, derived from bad water or some vegetable decomposition. These enter the circulation of the animal and poison the milk, and it is not the result of any poisonous plant the cows eat.

WHAT IS TO BE DONE?

What then, you will ask, shall we do to relieve ourselves from these difficulties? I would urge (and oh! my friends, I wish I had language and persuasive power sufficient to have you feel with me the deep necessity of attention to this matter,) I would urge that every factory and dairy association call its patrons and members together before the commencement of cheese making. Let the necessity of producing

healthy milk be clearly stated and discussed, then let a manager be appointed to keep a daily record as to the condition of all milk delivered. Clothe him with authority to examine the farms where the milk is produced, agree upon a set of rules that shall impose a fine, or a lower percentage of product upon the patron delivering milk from over-driven, over-heated cows, and from cows kept in pastures where the abuses to which I have referred are permitted. Let the manager reject all milk he knows to be imperfect. Adopt Mr. Gail Borden's plan of testing milk by samples, in which, standard of lactometer, temperature, cream, feed of cows, condition of milk as to souring and flavor are all noted from day to day, and the average summed up at the close of the week. In this way you soon discover from what source the bad milk comes. In this way you make progress and your product will take the lead in the markets of the world.

My friends, this work of education must begin, sooner or later; the longer you put it off, the more money you throw away in a useless, wanton waste. I have some experience in farming, and I know that he who works with his hands cannot afford to lose the fruit of his labor in this miserable way. Providence imposes a curse upon those who knowingly make a willful waste, and the poisoning of milk is not only willful, but wicked. I do not say but that many, perhaps all of you, within reach of my voice, may have of your abundance to spare, but if you have, let it go to those unfortunate creatures starving in garrets, suffering from cruel disease. The poor everywhere claim our charity. God honors them that give, but this wanton waste helps nobody, but on the other hand is a positive evil, since one man's bad milk injures all the good milk with which it comes in contact.

ELECTRICAL INFLUENCE—CAUSE OF MILK SOURING IN THUNDER STORMS.

The fungi theory serves to explain many things concerning milk heretofore shrouded in mystery. Take, for instance, the well known fact that milk rapidly turns sour during or after a thunder storm. A good many reasons have been assigned as the cause, but I have seen none giving so satisfactory an explanation as that resulting from the experiments of Andrew Cross. It is now forty-six years since the British Association and the world at large were startled by a statement that a man unknown to public fame had not only succeeded in producing known combinations of existing substances by means of electricity, but some combinations novel even to chemists. Shortly afterwards, it was announced that the same person had produced an unknown species of insect life by electrical experiments, or, at all events, insect life had been produced in positions

that would have been destructive to life, or the germs of life, if placed there accidentally. This man, then, unknown to fame, was Andrew Cross, a native of Somersetshire, England, whose death occurred in 1855, at the age of seventy-one. He had, in the course of his life, filled his house with electrical apparatus, and even extended it to the trees of his park. Here he experimented year after year, simulating in his laboratory some of the hitherto most mysterious of the processes of nature. He pursued this line of research for more than thirty years, totally unknown to the world, when, in 1837, he was, in a manner, discovered by the British Association. Being induced to attend a meeting of that body at Bristol, he and his researches became known to Dr. Buckland, who took an opportunity of speaking of them and introducing Mr. Cross as a man unconnected with any scientific body, who had actually made no less than twenty-four minerals and even crystalline quartz. The audience regarded him with astonishment, and their feelings were wrought up to a high pitch when they heard himself relate his experiments and their results. He owned to having made crystals of quartz and aragonite, carbonate of lime, lead, and copper, sulphurets of lead, iron, copper, silver, and antimony, besides more than one hundred other artificial minerals. He considered it possible to make even the diamond, and expressed his belief that every kind of mineral could yet be formed by the ingenuity of man.

The crystal producing operations were the subject of nearly unmixed admiration, and for some months Mr. Cross stood on the pinnacle of fame as a great and original discoverer in science. People spoke of his making crystals, without either seeing that he in reality only arranged the conditions under which nature did the work, or imagining that such creative effort as they attributed to him involved any impiety. It was by and by announced, and unauthoritatively, that while Mr. Cross was experimenting with some highly caustic solutions out of contact with atmospheric air, there had appeared, as if gradually growing from specks, between the poles of the voltaic circuit, certain insects of the *acarus* tribe. The truth was this: Mr. Cross had contrived a little apparatus for the deposition of crystals of silica in a lump of stone, through the agency of a voltaic trough. After the lapse of a fortnight he observed a few small whitish specks on the surface of the electrified stone. On the eighteenth day these specks had expanded, and from the surface of each seven or eight filaments were thrown out, but without exciting any surprise on the part of the observer, for embryo minerals exhibited similar phases in their passage to the crystalized state. Soon, however, the swelling specks assumed the aspect of insects standing erect on the bristles which formed

their tails, and on the 28th day Mr. Cross distinctly saw them move their legs. Imagine the surprise of an experimenter who had come looking for a simple mineral but had found—life! There could be no mistake about the matter. The creatures were no mocking insect apparitions—for in a few days they detached themselves from the stone, and began to roam about like other independent animals. Loathsome things they certainly were, for they belonged apparently to the genus *acarus*, which is famous for its ugliness, and which numbers some of the most nauseous parasites in creation in its ranks. But they continued to increase, and in the course of not many weeks at least a hundred were charmed into life. "How?" was the question. To this Mr. Cross attempted to give no decisive answer. "I have never ventured an opinion," said he, many years afterward, "on the cause of their birth, and for very good reason, I am unable to form one." The simplest solution of the problem which occurred to me was that they were from ova deposited by insects floating in the atmosphere and hatched by electric action. Still I could not imagine that an ovum could shoot out filaments, could become bristles, and, moreover, I could not detect on the closest examination remains of a shell. Again, we have no right to assume that electric action is necessary to vitality, until such fact shall have been distinctly proved. I next imagined that they might have originated from the water, and consequently made a close examination of numbers of vessels filled with the same fluid; in none of these could I perceive the trace of an insect, nor could I see any in any other part of the room."

The experiments were repeated in various ways, and with numerous precautions to prevent the introduction of extraneous matter. Still the insects appeared under circumstances which seemed to be totally adverse to the manifestation of animal life. They grew up beneath the surface of liquids in which they could not afterwards exist. They did so in fluids which were caustic or absolutely poisonous. They were extracted apparently from materials which had been fused in a heat exceeding that of melted iron and from solutions poured while boiling into the apparatus. They were engendered under an atmosphere impregnated with chlorine or charged with muriatic gas. Similar experiments, too, were afterward undertaken by Mr. Walker of Sandwich, who was still more solicitous, if possible, to exclude all foreign elements of vitality, but the acari laughed at his pains, and after a lapse of twelve or eighteen months invariably presented their unhandsome forms for his inspection. What could be said? It seemed obvious that electricity exercised some peculiar influence in the development of these uncouth little creatures. But in what way, and to what extent? There were persons who did not scruple to conclude

that the insects were really originated by voltaic power, and that this marvelous agent could under certain circumstances inspire dead matter with the principle of life, and mould it into living, breathing forms. Philosophers and men of science were puzzled by the intelligence, which flew over Europe like wild-fire. But the bigots—the men of starch souls—they whose judgments were strangled by a thousand prejudices, and who looked at all science through the smoked glass of their own conceit were furious at the father of electrical *acari*.

Mr. Cross was arraigned as if it were wicked to send a voltaic current through a silicious fluid. He dealt with unhallowed apparatus and was always trying profane experiments. He must be an atheist. He was an atheist. He pretended to create insects. Such a man ought to be suppressed. Who knew but if he professed to make mites he might also attempt to produce butterflies, sparrows, cats, spaniels—animals of all descriptions—by the unlawful means?

Nay, should we not hear some day of hopes being entertained that little boys would ultimately appear at the positive, and little girls at the negative poles of his diabolical batteries? One worthy individual took the trouble to write to the impious philosopher, denouncing him as a “disturber of the peace of families” and a “reviler of our holy religion.”

“I have met with so much virulence and abuse, so much calumny and misrepresentation in consequence of these experiments,” remarked Mr. Cross, “that it seems in this nineteenth century as if it were a crime to have made them.” And painful as it is to think that, in such an enlightened age as ours, it should be necessary for a scientific explorer to parry the strokes of such vulgar spirits, it is nevertheless true that this excellent man had to declare, for the satisfaction of the public, that he was neither an “Atheist nor materialist, nor a self-imagined creator, but a humble and lowly reverencer of that Great Being of whose laws his accusers seemed to have lost sight.” After all there was no real foundation of this abuse. That the ova of the insects were derived from the atmosphere, or conveyed into the apparatus by some natural means, (whatever fostering influences the electric fluid might be supposed to exert) was a point which Mr. Cross did not positively dispute. He did not know how to reconcile that view with the precautions he had used, but the idea of an electrical creation was one which such a man could never have entertained. It is enough, however, to say that the more recent experiments of Professor Schulze and other scientists have shown that when more stringent measures are taken to prevent the introduction of animal germs, the *Acari* of Cross are not produced.

NEGATIVE ELECTRICITY FAVORABLE TO THE GROWTH OF FUNGI.

He invariably found that negative electricity was injurious to all vegetation except the development of fungi. When the electrical equilibrium is disturbed and there is an absence of positive electricity, a wonderful development and growth of fungi takes place. Positive electricity, on the other hand, he found most favorable to all vegetation, except all fungoid appearances, which it checked. In the course of his experiments he constantly found fungi growing in copper and acid solutions. Mr. Cross considered that the roots and leaves of plants were in opposite states of electricity; some of his experiments in this direction are very interesting. He cut two branches from a rose tree. They were as nearly alike as possible, with the same number of buds, and both equally blown. An arrangement was made by which a negative current of electricity was passed through one, a positive current through the other. In a few hours the negative rose drooped and died, but the positive continued its freshness for nearly a fortnight; the rose itself became full blown and the buds expanded, and survived an unusual length of time. Again, he was able to keep milk sweet for three weeks in the hottest weather of summer, by the application of a current of positive electricity.

On one occasion he kept fishes under the electric action for three months, and at the end of that time they were sent to a friend, whose domestic knew nothing of the experiment. Before the cook dressed them her master asked her whether she thought they were fresh, as he had some doubts. She replied that she was sure they were fresh, indeed she said she would swear they were alive yesterday. When served at table they appeared like ordinary fish, but when the family attempted to eat them they were found to be perfectly tasteless; the electrical action had taken away all the essential oil, leaving the fish unfit for food. However, the process is exceedingly useful for keeping fish, meats, &c., fresh and good for ten days or a fortnight. Now, this is consistent with our observation and the facts known to every one in the habit of handling milk. When the condition of the atmosphere is in a negative electrical state, or shows a deficiency of positive electricity, a state of weather which we designate as sultry, close, muggy and the like, there is always difficulty in keeping milk sound. Even in good healthy milk, the fungus germs common to all milk increase and multiply with great rapidity, producing the common lactic acid fermentation or souring of the fluid; but in case fungi from decomposing animal or vegetable matter come in contact with the milk, rapid decomposition takes place, and we have rotten milk, putrid odors, and floating curds. The exposing of such curds to the atmosphere, as well as

the aeration of milk to improve its condition, are both philosophical, because these minute organisms of fungi are affected by the oxygen of the air, which checks their development and multiplication.

A NEW QUESTION.

The influence of electrical action is a question entirely new to the dairy public, but it is one concerning which I think some useful suggestions present themselves for our consideration. When the electrical equilibrium is disturbed, or when the state of the atmosphere indicates a preponderance of negative electricity, we are all made aware of the fact by its depressing influences. At such times it is important that we take more than ordinary care in the handling of milk; that it be kept out of harmful odors; that attention be given to its aeration, and such treatment be given it as shall be inimical to the growth and development of fungi. And, again, the fact that milk may be kept sweet a long time in hot weather by electrical action will offer a very important suggestion to inventors in the preservation of milk, and, perhaps, in the improvement of cheese at the factories. I believe that we are only on the threshold of the cheese-making art, and that as we become better acquainted with the laws of nature and their application, great progress is yet to be made in every branch of dairy husbandry.

WHAT IS BEING DONE.

I have dwelt upon this matter of milk and the curing of cheese because they are the living, vital questions of the dairy. Dairymen everywhere upon this continent have reason to be alarmed at the introduction of the factory system in Europe, with its cheap labor and immense fields of good dairy lands, for the day *may come* when *their* goods may be placed in competition with ours in our own markets. I tell you plainly that the dairymen of America are not making that rapid progress and improvement in their art which they should or that many imagine. We have developed a system of dairying and have a corps of skilled manufacturers here, and in every district upon the continent where the factories have been pushed, that have astonished the world.

I look with admiration upon this great body of skilled workmen—men of large understanding—men of thought, whose intellects have been sharpened in devising ways and means to escape the difficulties constantly pressing upon them in their special calling—men who are eager to learn, and who are ready and eager to adopt improvements—men who assemble at these conventions, and who, by their united action and energy, are capable of lifting this branch of industry into the highest range of excellence.

And yet they are obliged to lift and struggle and expend their energies upon a dead weight—the dead weight of farmers who will not think—farmers who will not act—who hang back and settle themselves down in the old rut—farmers who do not believe in progress—who do not come to these conventions—farmers who whine at low prices—who dump their rotten milk at the factory doors and grumble because it is not made into “gilt edged cheese.” It is this dead weight, this living corpse, that is to-day paralyzing our efforts for progress and improvement.

I see these men everywhere in my travels—they have rhinoceros hides—they are wrapped up in their own conceit and will not believe—they have no eyes to see and their ears are too long to hear. Oh, my friends! it is this class which the progressive dairymen of the age are obliged to lift and carry along by main strength. If we could only reach these men; if we could only induce farmers to improve, to make that progress which the age and the cheese making art now demands, our progress would be almost boundless and the prosperity of the dairy interest would be beyond peradventure. When you take into consideration the immense quantities of putrid cheese and the vast product of rancid butter which you force people to eat, it is a wonder that we have so little surplus in the market from year to year. We talk about the difficulty of finding markets and of getting remunerative prices, and well we may, for the kind of product we force upon the attention of consumers. Our best cheese goes abroad. The refuse is consumed at home. We complain because people will not buy and eat freely an article which is so poor and ill-flavored that there is no pleasure in eating it.

WHAT A GOOD ARTICLE IS WORTH.

There is a market in New York and Philadelphia and other cities for butter at \$1.00 per pound. Mr. Lyman of the New York *Tribune* asserts that there are 5,000 families in New York City to whom 75 cents per pound would not be considered a high price for all the butter needed for their consumption, if the quality desired could be obtained. Colonel George E. Waring states that he recently contracted for his butter with a Boston dealer (a man who is handling tons of best butter at thirty to thirty-five cents per pound) at seventy-five cents per pound with promise of an advance by and by. Why it is that this butter commands at wholesale twice the retail price of “best butter” he explained in the “Ogden Farm Papers” as follows: Simply because it is of extra good quality, hard, firm, high colored, well flavored and well worked. It is put up in neatly ornamented half pound cakes, each one of them is wrapped in a square of damp muslin and they are packed on shelves in an ice box,

so that they reach the market in the most attractive form. No pains are spared to make things as appetizing as possible, and butter really costs as much as five cents a pound more than it would if put up in the ordinary way. He says: "There need be no fear of overstocking the market with really 'gilt edged' butter. It will always be scarce and high. For instance, Mr. Sargent of Brookline, at whose feet I sit in dairy matters, sells his whole product to Hovey—my customer—for \$1.15 per pound, and Hovey sells it for \$1.25. I hope in time to equal him."

IMPORTS AND EXPORTS.

The imports of dairy produce into Great Britain for 11 months ending Nov. 30, 1871, were, according to official returns, as follows:

	Pounds.	Value.
Cheese	129,329,600	\$15,702,010
Butter.....	138,246,416	\$32,098,210
		<u>\$47,800,220</u>
In 1870 same time.		
Cheese	98,922,656	\$13,767,165
Butter.....	113,552,992	\$27,485,265
		<u>\$41,252,430</u>
In 1869.		
Cheese	95,090,112	\$13,397,115
Butter	120,987,440	\$29,670,330
		<u>\$43,067,445</u>

The importations for the other month, December, would doubtless add to the above for each year from 15 to 20 millions of pounds of both butter and cheese.

According to official returns from the Custom House, the exports from New York, from January 1st. to December 23, 1871, were: Cheese, 67,530,000 pounds; butter, 8,519,700 pounds.

In 1870 for same time: Cheese, 61,457,500 pounds; butter, 1,394,200 pounds. An increased export of cheese in 1871 6,078,500 over 1870, and of butter the increase was 7,125,500 pounds.

On the 1st of January, 1872, Normandy butter sold in London at wholesale at 160s sterling the hundred weight, and the Canadian at 70s to 116s., a difference of over a shilling per pound gold on articles, both of which are imported into England.

My friends! we must study the palates of consumers if we wish to obtain fair prices. It is the quality of the goods that must coax consumers to eat and to pay, and not the empty words of those engaged in this interest.

CONCLUSION.

In conclusion I feel constrained to allude to a branch of dairying concerning which hitherto very little has been known by the dairy public. I refer to condensed milk, the profits upon which are enormous, a business now in its infancy, but which in my opinion is destined to have a very important bearing upon the dairy.

Statistics show that nearly half of the milk produced in the United States is consumed directly as food. We have between ten and eleven million milch cows. Thus five million cows are required for supplying fresh milk consumption. If we add the milk supplied by the cow with the iron tail, the water dilution, it is estimated, would be fully equal in quantity to the product of a million cows more.

Now, the condensing process is simply eliminating 75 per cent. of water from pure milk, and putting before consumers a reliable article of long keeping qualities, purer, and more wholesome than milk as usually sold because the process of condensing kills those organisms which are often the cause of disease in impure fresh milk. To give you some idea of the profits realized from this business, I will merely mention that a pound of preserved condensed milk sells for 29 cents.

The cost of the cured milk at three cents per quart and preparing it for market, is as follows :

	CENTS.
1½ quarts of milk, 3c per quart.....	4½
6½ ounces best refined sugar.....	4½
Condensing	1½
Can	3
Caning, &c	½
Total	13

Leaving balance as clear profit after paying all expenses of 16c on three pints of milk. A cow yielding on an average twelve quarts per day would at this rate yield a daily profit, after allowing three cents per quart for her milk, of \$1.28. At the condensing factories the milk is bought of farmers at from three to five cents per quart, and the profits I estimate are about a dollar a day on each cow after paying farmers the prices I have named for the milk. There is an export demand for condensed milk, and it goes largely into use for ship stores. I was told at the meeting of the American Dairymen's Association that the condensing factories of Massachusetts and New York had recently received an order for eleven million pounds from China.

IMPORTANCE OF ANALYSES OF SOILS.

TRANSLATED FROM THE GERMAN OF ALBERT ORTH,
BY JOHN H. KLIPPART.

In the year 1789, there appeared at Erlangen a work, entitled "Field culture, chemically investigated, to elevate it to its highest degree," by Christoph Albrecht Rueckert, royal apothecary at Ingelfingen, in which the following views and doctrines are laid down at several places, viz:

1. The knowledge of the ingredients of which plants are constituted; the means of manuring, etc., alone opens the way of the farmer to success; without this knowledge, agriculture cannot be called a science; empirical knowledge is of no avail, brings injury only, but no gain. (p. xvi preface.)

2. That of which plants are composed can also promote their growth.

3. Plants yield in 100 parts, 8 to 20 parts of ashes in which 2 to 3 parts are salts, the remainder earths. (p. 5.)

4. Decomposition separates salts, "that are suitable for the food of many plants," from earth in plants and in animal bodies. *The salts are not produced thereby but separated only.* (Supplement 41, p. 213; same, 42, p. 214.)

5. Earth is that substance out of which the most indispensable parts of plants are formed. Its presence produces fruit, its absence barrenness. (Preface p. x.)

6. Water disintegrates the component parts of vegetation and leads them over to the plants from earth. Spring and river water which carry such earth, always furnish, outside of chemical experience, proof of the possibility that earths may be found in plants. (Preface p. x.)

7. Even the best of fields demand a return for that which they annually lose by cultivation; a return is always necessary to insure fruitfulness, either by manure or earths, or salty metallic stercoration. (p. 117.)

According to Rueckert, therefore, the plant obtains its food from earth by means of water that dissolves it; nourishment is not produced in the plant itself, but reaches the plant from without. The indispensable substances by which the plant builds itself up, are salts and earths, and for the best of fields a return is demanded for the loss sustained by cultiva-

tion. Salts are produced, by decomposition, from vegetable and animal substances.

It is clear that these sentences already contain some important truths, and that by them a good foundation for discoveries of the laws of agriculture had then been obtained, if only the *then* condition of natural sciences had been able to furnish the proof. But if we compare with these truths the views that were entertained in the times immediately following them, most remarkable retrograde steps are not to be misapprehended. The idea that certain substances or elements are formed in the plant itself (e. g. the opinion of practitioners, even now, that under certain conditions chess or cheat, without seed is formed of rye (or wheat), or that certain organisms are produced without either egg or cellular tissues) drove out as a generative spontanea of chemical elements, the truths communicated so much farther, for the reason that these notions were based upon supposed experimental investigations, and even Thaer, who laid such great stress upon the natural fundamental laws of agriculture, said in his "Principles of rational agriculture," (ii. p. 96), that LIME "is produced daily in organic bodies." Thaer intended only to oppose the views of some naturalists who held that all lime is the product of organic nature, because lime is found upon primitive mountains at a height where no petrification of organic bodies are to be found.*

Through such teachings as these the basis for a scientific treatise of the subject was lost, and it was only through and by the men who, about the year 1840, furnished special experimental evidence that the production of elements in the plant is an idea that belongs to the department of fables, and that the development of the plant is positively dependent on the presence of certain substances and combinations, and that without these its existence is either precarious or ceases entirely. By these experiments, which demonstrated that the natural sciences were applicable to agriculture, substantial progress has been made upon which it will be safe to build.

To aid in this work there came a genial chemist who understood how to combine data and facts already known with those discovered by himself with skill and spirit, to invest them in their bearing upon agriculture, and to prove their importance for material developments, (Leibig's "Organic Chemistry in its application to agriculture and physiology," first edition, 1840,) and it becomes comprehensible why the attention of the cultivated became directed to these facts, and a host of young, energetic powers strove to develop the new doctrine further and utilize it.

* I believe Geologists all concede that lime when occurring in strata is of organic origin.—KLIPPART.

Distinguishing between those parts of the plant which, by burning, turn to ashes, and those that volatilize, was found the prominently distinguished result that the presence of the component parts of ashes in the medium immediately surrounding the roots, is the indispensable condition for the growth of the plant, and that the atmosphere, directly or indirectly, must be regarded as the source of the unfixed component parts. But the question as to the replenishment of mineral nutriment and the necessity of it, the cotemporaneous demands of other conditions that are equally essential to bountiful harvests under various diverging circumstances, are too frequently not considered.

As it is, in experiments in the chemical laboratory, with a view of producing certain results, crystallized combinations, etc., aside from the presence of materials, other conditions, such as the comparative quantity of the matters, the presence of disintegrating agents, as water, alcohol, æther, etc., external conditions, separation, temperature, pressure, etc., are all so important, that by the least deviation the desired result cannot be attained; even so must certain various conditions of growth be complied with in the production of chemical combinations by vegetation. Such conditions may consist in certain temperature and degrees of moisture in air and soil; the absence or removal of combinations that may operate injuriously upon the development of plants, the presence of disintegrating agents which supply nutriment to the plant, and the presence of matter and combinations out of which the plant builds itself up, can be designated only as one series of these conditions. The absence of such or equally essential conditions must naturally have the effect that the vegetable nutriments on hand cannot be available, and in such case are useless. The question then is not how to apply this nutriment elsewhere, but how to restore the conditions of growth by which this nutriment may become available to the plants. If this is not done, and the conditions of growth are but partially and not equally restored, as a matter of course important economical injury must follow. A lawyer, influenced by the teachings of Liebig, bought 500 acres of sandy land, and 500 acres of woodland, in northern Hanover, at a low price, and erected thereon costly agricultural buildings, with a hope of making the soil productive by salts. It is worthy of remark, that after many experiments, attention was directed to the use of clay marl, by which the best effect was secured, and that the plantation, after 100,000 thalers had been thus been invested, was sold for the price of the buildings. Many farmers are acting no wiser to-day.

Such mistakes would occur more seldom if in connection with the investigation of plants, manure and nutrition, an exact examination of the

soil, its qualities and component parts would go hand in hand, and the fundamental study of the soil not be ignored, by following the teachings of chemistry on the omnipotence of mineral matter. That by this it has become difficult for the young agriculturist to find the rational way to farm, cannot be denied.

The human race is possessed of nothing more important and valuable, in the form of material things, than the soil. It is its foundation, the condition precedent of its existence, the fountain of its wealth and power, and our language, very rationally, in a poetic manner, calls it "mother earth;" and an old saying is that "stones turn into men." But if we compare the importance of the soil with the number and value of investigations, we must say that science has neglected it in an unpardonable manner. This indifference is explicable in a time when the cultivation of the soil was left with unconcern to the lowest grade of men, and land and soil were in great abundance compared with the number of inhabitants, but is inexcusable at a time when the extent of productive soil is small, compared with an increasing population. At the time of the first development of science, which may well be called the science of the nineteenth century, when the foundation of chemical investigations were laid, there was comparatively more interest awakened with regard to the application of the new science. It is worthy of remark that the reformer of our agriculture, Thaer, laid great stress upon the matter of soil investigations; and that at his instigation a whole series of analyses were made, which at present, very truly, would seem very simple, but for practical purposes are still of great value, and more especially so as Thaer sought to base his classification of soils upon them.

Schuebler's classic labors on the physical qualities of the soil are too well known to enlarge upon, and Sprengel has, with untiring industry and especial devotion made a great number of soil analyses, but which, with the methods of investigation then in vogue, could not receive the requisite degree of precision. In the year 1833, Lampadius, with "special regard to Dr. Sprengel's new analyses of plants and soils," and "with regard to the chemical constitution of the soil," set up mineral manures and recommended a manure salt, having the following composition, for 1000 lbs. of wheat, to be grown on a soil of decomposed gneiss earth:

Fine bone ashes.....	13	pounds	5	oz.
Ground gypsum.....	3	"	8	"
Common salt.....	1	"	10	"
Soda.....	10	"	..	
Potash.....	4	"	..	
	—		—	
	32	pounds	7	oz.

In consequence of the general incitation caused by the works of Liebig, and the consequent deeper view into the importance and necessity of mineral nutrition for plants, the Prussian Agricultural College, about the year 1845, resolved to cause the quality of the soil, so far as it related to nutrition for vegetables, together with the probable exhaustibility by cultivation to be clearly established by eminent chemists. Credible as was this resolution to the College, to secure reliable contributions tending to the solution of these most important problems of soil cultivation, by chemical analyses, it is equally to be regretted that the execution was in no wise corresponding. It was ordered that the chemical investigations of the soils analysed should be made by three different chemists, and the results ascertained after several years of harvests of rape and peas. The analyses of these chemists, respectively, were delivered to Professor Magnus for compilation, and by him published in the Prussian Annals of Agriculture for the year 1849. This compilation shows such vast differences in the respective analyses of the same soil, and especially in references to the most important ingredients, that it is difficult to explain them. We find, for instance, in the same soil the following statement as to per cent. of

	(1)	(2)	(3)
Carbon.....	2.360	0.013	2.850
		Average, 1:219	
Phosphate.....	(1) 0.432 trace	(2) missing 1.028	(3) 0.272 0.009
		Average, 114:1	
In another soil.			
Phosphate.....	(1) 0.004	(2) 0.418	(3) 0.971
		Average, 1:102	
Potaash.....	(1) 1.155	(2) missing	(3) 1.456
Natron.....	0.520	missing	0.627

Even among analysers who are known to work accurately the following figures are found by the side of each other, viz :

	(1)	(2)	(3)
Carbon.....	1.03	2.92	3.010
Sulphuric acid.....	0.004	0.097	0.068
Phosphate.....	0.026	0.54	0.230
		Average, 1:20	

By this sort of compilation in a journal devoted to agriculture, in which the erroneous analyses are not separated from the correct, but, on the contrary, are placed side by side as of equal value, and which point to an unsatisfactory mixture of soils of great variety in materials, of course the great and distinguished efforts of the agricultural college could not be realized. The necessary consequence must be that the thinking

farmer is led to doubt the value of the natural sciences—and especially chemistry—these highest treasures of society as requisite to furnish data, facts and directions for practical activity. The manner in which these figures are published must, of course, completely discredit the analyses of the soil as a safe guide, and caution the farmer against placing any confidence in the present or prospective fertility of the soil as revealed by analyses. Nor did it fail to effect this, for the farmer concluded that he could not reasonably expect any assistance from chemistry in regard to the soil; and what was yet more to be regretted was the fact, that analyses became the subject of witticisms and mockery. I was informed that on a certain plantation, after six consecutive crops of peas, there was more nutrition for plants found by analyses in the soil, than there was before these crops were grown. Such results admonish us of the necessity of ascertaining, in the first place, whether, with the present scientific attainments, a correct and certain answer may be expected to each of the questions under discussion. True, the loss of phosphate and alkali caused by crops of peas, cannot with certainty be ascertained by analyses before seeding and after harvest, because it is impossible to prove what parts of the top soil was extracted from the subsoil, and what proportion of the retained roots was the product of the subsoil and the top soil.

Notwithstanding several agricultural chemists—among them Stoeckhard, of Tharandt, have more recently and in a modified manner, pointed to the value and necessity of a correct analysis of the soils, yet these efforts do not command that respect and confidence that they otherwise would be justly entitled to, because the results, as given above, led to a biased method of reasoning and a correspondingly biased treatment of the subject, and in the same degree that the means of experiments have been perfected, most people lost their interest in the subject.

It has now the appearance as if the knowledge of the soil was to become an exception in the natural sciences, and in the progress of knowledge, not to be entitled to the same benefit as other departments. The remark of Trommer, in his manual of the soil, which appeared in 1857, viz: "A precise chemical analysis is very difficult to make, and uncertain, and requires not only manual skill but great patience and fortitude, nor does it contribute the benefit to practice once claimed for it," expresses the status of the public in reference to chemical investigations of the soil. It also denotes the high expectations placed upon it induced by the so-called mineral theory. By means of chemical analyses, we were straightway to be furnished with a simple comparative rule for fertility, which could not be attained by the multiplicity of any other factors. The delusion of these extravagant anticipations has now attained the opposite—

disinterestness, and we frequently find such carelessness in the investigation of soils, and such ignorance regarding their ingredients, that great detriment must inevitably follow to the agricultural public. And that this had its influence also upon the doctrine and the study of the subject, has been evident enough among the so-called "learned farmers," and the subject as well as its study were not free from a partial tendency. Nobody will withhold his acknowledgment of the treasures of science acquired by academies and universities, and every cultivated mind will concede that the greatest progress that can be made in the art of farming, and the rearing of domestic animals, is attributable to the progressive knowledge of natural phenomena, their laws and applications. But when natural sciences are used fragmentarily and spasmodically, producing a sort of half knowledge only, then it certainly is not the fault of science, and furnishes no ground for reproach; it is rather the "practice" which should be reproached. Experience has shown too often, that in consequence of this "practice," the eye became clouded and the judgment warped by a host of prejudices; as per example, that through this very knowledge of the soil, the constituent parts and qualities became alarmingly neglected, and not the least value was placed upon the investigation of the soil; its great importance ignored. For instance, I found a farmer who operated almost independently, and who had "studied at Heidelberg," but who could not distinguish between granite and basalts, and erroneously declared the substrata of soil to be granite, whilst in reality they were basalts and sandstone. Another who was about to lease, and did lease a farm, in viewing and examining it, felt himself sufficiently informed by taking an hour's ride in a field, in a snow storm in January, to test the depth of the surface soil, and sub-soil, and the composition of both; but he did not appreciate the use of a spade with which to do this. One with such ignorance as this, when called upon to arrange a farm, he did not know the least about organizing it, or of placing capital to soil, climate and market, in the most correct relations. And the more important it is to appropriate all means at the command of science and experience to agriculture, and the more certainly that these means point to a thorough, scientific and practical education; to a thorough apprenticeship in practice and science, the more we ought to feel ourselves cautioned against partiality for "practice's" sake only. Armed and equipped with these means the farmer is in a condition to apply the natural sciences to agriculture, and practice the highest possible remuneration from the capital invested. The success or failure of the farmer depends on his correct or false judgment of the soil. And the State, through her representatives of science, assumes the responsibility of col-

lecting the materials through the use of which it shall be easy for the individual to appropriate the richest possible treasures of the soil.

The object of this essay is to furnish a contribution to the investigation of the soil, and thereby direct attention to methods to be pursued as well as to the importance of the subject generally. I would feel myself amply rewarded if I could awaken a greater interest and be of service in reconciling the differences and jealousies between science and practice on this subject. Unlike any other department here is an indispensable requisite for progress to work with united energies. The discussion will naturally be divided under two heads; the first will be the value of soil analyses, and the second the method of analysis.

I have been compelled to draw upon the discoveries and scientific productions of distinguished men in this range of developements, which were made in the interest of a cause in which we have all enlisted our services with a view to utility as well as to make things clear and plain.

If certain subjects and phenomena have been repeatedly touched and in different places, I can only say, that the complicity of the effects of certain combinations, and the explanations of certain phenomena, have made it necessary so to do.

FIRST PART—THE VALUE OF SOIL ANALYSES.

1. The principal instruments made use of in explorations of the soils are a spade,

2. A bottle of dilute muriatic acid or nitric acid, and

3. A ground (earth) auger, useful for various soils.

To convey the idea in the briefest manner, and to indicate a practical agricultural method, the investigator examines the top crust and subsoil in reference to their respective component parts and density. Its readiness to break and crumble gives the examiner a starting point for the proportions of its earthy parts of sand or gravel.

The color of the earth and subsoil indicates the quantity of humus, the depth of the layer cultivated, containing humus, and the various degrees of the oxidation of iron.

Lime plants, such as succory or chicory, esparset and others, indicate the presence of certain quantities of lime in the surface and subsoil, and which is more positively ascertained by application of nitric acid.

Other plants, such as rushes, (*nardus stricta*) the sorrel (*rumex acetosella*) certain careces, juncaceas, etc., appearing singly or in greater quantities, indicate acidity of the moisture, which is also indicated by the color, and lead to the discussion whether drainage or the application of

lime or marl, or both together, or after each other, will have the best effect.

The origin of the soil, whether native or drift, whether it is disintegrated and decomposed basalt, shell-lime, mica, freestone, or whether deposited by streams from forests, or by ocean-waves, etc., all furnish in a degree a rule for ascertaining the quantity of plant-food and its solubility.

The construction of the subsoil indicates whether it is permeable by water and penetrable by the roots of plants, or whether it will resist the one or both, or whether it contains the food absolutely required by farm plants.

The locality of the soil is to be considered in reference to its climatic conditions, rains, drouths, cold, snow, presence of diseases of plants, etc.

In addition to all these indications, the explorer endeavors to complete his judgment by the appearance of the vegetation and historic reports and in this wise is enabled to pass a qualified opinion on the value of the soil and plant culture, which is more or less reliable in proportion to his practical experience, enlarged views and general knowledge. Every agriculturalist should be encouraged to practice his eye in this manner, in order to initiate himself rapidly in various localities.

Yet it is always astounding to hear it said, that a correct scientific establishment of the foregoing conditions are of no value, or at most very little. It is very essential that the intelligent, practical naturalist must have more certain and reliable points than the conclusions of the investigator of the soil may establish. Instances are known where the soil-explorer has found conclusions as to the ingredients of soils which were not supported by the growth of vegetation, but in which a correct scientific investigation alone is able to lead to true or correct conclusions.

Pure empiricism must give way to a thorough practice when armed with the teachings of natural sciences, and the educated, scientific practitioner is enabled to appreciate results which the simple or uneducated practitioner cannot understand. A correct knowledge of the ingredients of the soil, out of which the organic world builds itself up, as well as a knowledge of those that are injurious; together with a knowledge of the vegetable and animal organisms, which may be usefully employed, as well as of those against which energies must be directed; these, together with a general knowledge of botany and zoology in their most general bearing, with all the scientific knowledge belonging to them, will furnish the weapons with which to fight the "battle of life" and most successfully overcome the enemies. But he who is only scientifically educated and has not learned by personal view and practice, these real, practical, agricultural conditions, is not prepared to turn such scientific results to

good account with any degree of certainty, closely discriminating, as he should, between investments that make ample returns and those that "don't pay."

MECHANICAL OR WASH-ANALYSES OF SOILS.

A merely superficial glance teaches the difference between sandy soil and clays, and by paying some attention to breaks, fractures, veins and crumbling, closer discriminations may be instituted than those already alluded to. And yet the eye of the agriculturalist is not seldom deceived, and I know, for example, that the tertiary sandstone soil near Bieberbeck, in the Harts mountains, in consequence of the exceedingly fine grains of sand which it contained, was repeatedly mistaken for clay, notwithstanding that it is composed of one-third only of fluviatile parts. "Even the field soils of the high Flemings, known as a better and more solid soil, to judge by some experiments of Dr. Hellriegel, contains exceedingly little clay; its greater solidity is especially to be ascribed to the extraordinary (microscopic) diffusion of quartz-sand, which constitutes by far its greatest component parts."

The most correct conclusions can therefore be reached only by mechanical means. By these means we ascertain the proportions of the finer and coarser parts, and these are again sub-divided; so that we are enabled to examine the qualities in a more correct manner. By the mixtures of fine earths we are enabled to ascertain the substances, that appear in larger quantities in the disintegrating products of feldspar, silicious clay, or pure clay, as mica or quartz-dust. By examining the coarser mixtures, which according to size are divided into gravel or pebble, coarse or fine sand, we ascertain whether fine earth may be expected to accrue from it in the course of time or not, as per example, even the conclusion what mineral food for plants may become unlocked for future harvests by the disintegration of feldspar, augite and hornblende, as well as what proportions have already passed into the finer earths. Nature is constantly in action, dissolving and disintegrating, wherever combinations are found that can be attacked by the ingredients of air or water; the primitive granite as well as in the smallest space of soil, and every where, here and there, food for plants is forming. Some of the younger rocks, whose component parts have long been exposed to the disintegrating influence, such as sandstone, tertiary sandstone, and tertiary sand, being composed almost entirely of quartz-sand, are poor in soluble combinations, or rather in substances of plant-food, and if the coarser component parts of the earth are derived therefrom, they are to be regarded as more than dead, or unchangeable material and not to be considered as even a latent spring of fertility. It is otherwise with the sedimentary formations which have

at least the massive rocks as the same composition or approximate, and yet produce lasting substances for plant food. The diluvial sand and clay clearly indicate their origin from the northerly primitive rocks and lime-rocks, is in this respect very different from the tertiary formations, and both therefore very unequal in value. What influence primitive rocks and the various stages of disintegration have upon the culture of the soil, is proven in a most striking manner in the profitable management of gneiss-soil near Freiburg, where for a period of twenty years, Mr. Stecher by the application of a small quantity of alkali, for certain crops, and is further evidenced by the culture of potatoes for thirty years without any material increase of alkali (potash). Close investigations of the soils indicate to us the rocks from which they are formed, and the principal cause why investigations of the soil have as yet produced such few applicable results is, that by the usual modes of investigation, we have not started out from the rock and traced it through the several stages of disintegration, until it finally became soil, but have examined the one for itself without ever tracing any connection to the other. A glance at a geological map of mountains informs us of the great extent and spread of some particular rocks, and on the other hand of the great number of other rocks thrown together in a small space. Gneiss, mica, red sandstone, chalk with lime, etc., are thickly crowded into a small space, and this is the case in various formations of tertiary mountains and diluviums. The soils arising near the edge of these became mixed and plainly indicate the origin of the formations, more especially when water influenced the mixture. What analysis would be of any value made from the oft-recurring sandstone, slate and marl of the Trias, appearing in such great quantities near Cassel and in Fulda, if the analyst takes the surface soil from a given point as a basis? This surface soil in short distances is subject to the greatest variation. The application of results thus found, to the culture of the soil, is then no easy matter.

Aside from climate, situation, subsoil and chemical composition, the *proportions* of fine earths and coarser mixtures for vegetation, the culture of plants and their kinds, are in a measure thereby fixed. On these proportions depend the percolation of the rains, the absorption of moisture from the atmosphere, the rapidity with which it is taken up by the subsoil or evaporated, how the air may penetrate and operate in the soil, and on this condition depends the influence of the temperature upon the soil.

The character of vegetation depends upon the moisture, warmth of earth and air, the distance from the equator, or from the shores towards the interior of the continent; and the elevation above the level of the sea. But even among so many conditions, all of which are important, yet the quantity of the soluble parts, have the greatest influence upon the

crops. The warming of the surface of the earth, stands in a certain relation to the quantity of moisture. Evaporation of moisture produces a reduction of heat, and the ever-changing quantity of water is, therefore, the resulting factor. Schubler's investigations have established this influence of the soluble and insoluble parts in a most beautiful manner. Now, if a moderate proportion of moisture and warmth is peculiarly suited to vegetable growth, in the same ratio as to quantity of each proportion is vegetation influenced, and during the period of growth it is easy to discriminate between favorable and unfavorable periods, which, by the variation of their conditions, must differ vastly in character in regard to the nature as well as the duration of each separate period.

The growth causes the proportions of light, warmth, moisture, and proportion of ozone in the atmosphere, water and air contained in the soil to be continually changing. These conditions of fertility, therefore, appear in different combinations in different soils, and thereby the maximum of production is more or less favored. Under unfavorable conditions, periods may take place in which growth is suspended, and these periods may occur seldom or frequently, or be of shorter or longer duration. There are soils in which the conditions of growth are confined to a very short space of time, and the boundaries of cultivation are fixed. Whenever the injurious effect of such a period is too strong or too continuous for a plant, it cannot live under these conditions, and only such plants will flourish as can withstand such unfavorable periods without injury. The character of vegetation of a country is established by this, and here the question is the physiological peculiarity of the plants, rather than the chemical components. And this furnishes a rule for the selection of plants to be cultivated, for while per. ex. rye and wheat do not differ very materially in their chemical compounds, they are so wide apart in their physiological nature, that wheat, for extensive cultivation, is almost entirely shut out from certain regions of country. Schwerz, in his classifications of the soils, places those containing the greatest and those containing the least soluble quantities at the end of his list, and places the agricultural classification of wheat soil and rye soil by their side.

The beet soil, in the vicinity of Magdeburg, which by repeated cultivation of chop food, is made friable to a depth of 14 inches, produces Lucerne, in many places, better and surer than red clover, and the cause for this is to be found in the essential difference in the physiological natures of the two, while the chemical compounds of the same differ but little and afford no rule for the variation.

These relations of favorable and unfavorable periods, during vegetation, have the greatest influence also on the cultivation and the manuring

of the soil. If the sum and substance of the favorable periods, then, are truly the periods of growth, food must be applied so much the more intensely, as that period for growth is shorter in time, when equal results are anticipated. It is a matter of course that manures applied quantitatively and qualitatively in various soils, must produce various effects. If the intensity of absorption of food and its assimilation was the same in larger and shorter periods of growth, then the harvest would be in proportion to the duration of the period of growth. We have been in the habit of comparing the absorption of plant food from the air and from the soil, by the plant, with the whole period of the growth of a cultivated plant, but this can now be admitted within certain limits only, because the production in great quantities depends upon what is taken up during the period of vegetation favorable to the growth; and, as already remarked, the quantity of *all necessary nutritive substances*, and the solubility of the same, must be the greater in proportion as the conditions and relations of and between both parts of the period of vegetation is unfavorable, when a good return is anticipated.

Whoever observed the vegetation of natural and artificial meadows, has not seldom noticed the little growth made as late as the middle of May when the weather was cold and wet; and that within the two weeks following, with the weather hot and moist, a sufficient growth is made to yield a full crop. During this time all the substances contributing to make food must be "on hand." And so it is with other cultivated plants which make their growth in a comparatively short space of time.

The results of experiments in cultivating plants in liquid solutions, or in soils especially prepared, where equal conditions of growth during the period of vegetation can be established, are therefore applicable to other conditions and in like manner the product of the mean temperature of a country, in the vegetative period of a plant..

The foregoing will be best understood, when the chemical conditions of vegetation are fully known.

What has already been said is intended to show that the quantity of soluble parts must govern the agronomic division of soil, and that the classification, based upon the immediate derivation from primitive rocks, does not give the relative values for agricultural purposes in a satisfactory manner. True, the classification of Fallouche has the great merit of directing attention to the significance of the primitive rocks, which, as a general thing, is not regarded by others; and a granite soil, and a mica slate soil, a diorite and a sandstone soil, must necessarily vary, in a corresponding degree, with their respective component parts.

CHEMICAL ANALYSES OF SOIL.—If we should start out with some agronomic charts that were exhibited in the French division of the Paris Exhibition of 1867, we would find that the atlas, published in several large volumes, under the title of "*Département de la Somme Cartes Agronomique Communales*," deserves a special notice. The object of it is well expressed in its remarkable preface: "Had each community a separate chart, one copy deposited with the mayor and the other in the elementary school, with specimens of soils and subsoils, together with an analyses of them, and earths and substances intended for improvement of soils, such as marls, clay, etc., etc., placed by their side, then the possibility would be manifest of educating the farmers in the nature of their soils, and the means of their melioration by a system that would deserve the title of 'practical directions in agriculture by inspection.'"

Excepting the mention of the arrondissements, number of cantons, communities, houses and inhabitants, and extent by hectares,* by far the greater part of the atlas was made up of maps of select localities with a scale of 1 to 10,000, upon which the various soils were marked, colored according to their proportions of clay and sand, mixed with or free from lime, per example Commune Blangy, Analyses No. 7:

Silicious sand—lime	61.0	{ Silicious sand	27.70	} 50.50
		{ Carbonate of lime	34.30	
Calcareous clay (marl) ..	37.90	{ Carbonate of lime	16.20	
		{ Clay	21.70	
Salts soluble in water and loss in analysis.....			0.10	
			<u>100.00</u>	

The analyses, therefore, shows the quantity of lime in the finely divided form of marl, and the quantity that appears in the form of coarser sand or stony mixture. Some of the maps contained 32 analyses of the surface soil and subsoil of single localities, to which were added, in each case, experiments of surface and subsoils with accompanying analyses.

Of all the many articles in the exhibition, very few have made such an impression upon me as the idea here represented by a general, systematic naturo-scientific investigation of the soils, and their bases to furnish materials for the increased production of the soil, and therefore I examined this portion of the exhibition with peculiar interest.

As is said in the preface, the attention of the intelligent farmer, must, by the exhibition in the mayor's office, be directed to the sources of fertility of the soil and the deficiency of his cultivation, especially if at the same

* A French land measure equal to 100 square metres, or 11,960 English square yards, or 2.47 acres.—KLIPPART.

IMPORTANCE OF ANALYSES OF SOILS.

time means of melioration, such as lime, marl, artificial manures, etc., accompanied the exhibition, and for traveling teachers and primary schools it is an indispensable means of demonstration. Had the North German communities charts of that kind, collections of specimens of soils and means of meliorations that are in their reach, the treasures in the form of clay and marl beneath soils in most localities would be used far more by farmers and intelligent agriculturists, but amongst whom it is almost as much unknown as a village in Siberia.

But the farmer of the North German plains has a cheap means of improving his light soil without additional covering, and make it permanent. This consists in composting the stable-manure in the manure yard or stable, but more especially by composting in the field, to be improved with marl, clay, muck, &c., found near by, in the manner suggested by Administrator Teichmüller in the reports of the Central Agricultural Society of the Province of Saxony for 1868. This plan has such a beneficial influence upon the quantity and quality of the manure, and has become so popular in highly cultivated Belgium, which has in part the same soil as the North German plains, so also in Westphalia and Electorate of Hesse. The results of this plan has such a remunerating influence upon agriculture, that it is safe to say, "the mixture of these earths, in proper selection and applications, pays well, and this melioration of the soil costs very little. The interest otherwise manifested for the mixture of various earths, has often been checked by the "theory of minerals," while at the same time it is easily proven, that the mineral nutriments furnished were subjected to a higher and more rapid exhaustion. From a scientific standpoint this composting of stable manure with these earths cannot be too highly commended. For the proper selection of these earths, analyses alone furnishes the proper guide.

Somewhat more extended but similar investigations are given in "*Carte agromoque des environs de Paris*," by Delesse instigated by Haussman. The number of soils are reduced and treated under two principal heads.

1. Those free from lime (*terre sans calcaire*.)
2. Those containing lime (*terre avec calcaire*) and are distinguished by their light red and yellow colors. In both, those rich in humus (*terre riche en humus*) are especially designated. The chart for each district, mentions the quantity of sand, smooth and sharp gravel, clay, marl, (*argile, marne*) expressed by vertical lines of red dots, circles, angles (sand, &c.,) horizontal lines of blue streaks, crosses, (clays, &c.,) without destroying its distinctness. In this chart we have a striking picture of certain peculiarities of the soil. The investigations upon which this chart is based, are however not sufficiently accurate for practical purposes.

The chemical analyses of Thaer includes the quantity of carbonic acid, lime and humus; and the classes ascertained by the wet analyses from clay soil to sand soil are ranged under two heads, in proportion as they contain or are free from lime, and the subdivisions according to the quantity of humus therein contained ("poor, medium, rich"). There is no doubt the soils have by this method been well characterized in regard to their physical qualities as well as partially in their chemical effect. Earths containing alkali are necessary nutriment for vegetation; lime and magnesia are found in all plants, and even in large quantities in culture plants of the family of the leguminosæ. A more important function is, however, performed by the carbonate of lime in the soil. By the action of carbonic acid, the humus combinations are neutralized and the humic acid of the organic salts is dissolved. Carbonic acid then unites again with the lime, and the rotation is thus produced anew. Lime, therefore, is necessary for the change of organic matter in the soil and the manure. It operates directly and indirectly upon the solubility of mineral food for plants, and accelerates the formation and development of the plant.

As in the mountain masses, by the combination of the soluble portions of rocks containing feldspar together with soluble lime formations, zeolites (?) are very often formed. So it appears beyond doubt, that by the solution of feldspar, mica, etc., and by the presence of carbonate of lime, zeolitic silicates are formed in the soil. It is very true, and as the investigations in fluid solutions have of late so decisively shown, that the plant obtains a large proportion of its carbon from nitric acid; therefore lime must be of great utility in changing the combinations of carbon in the soil, from ammonia to nitric acid, which operates as a nutriment and as a solvent at the same time, and the results of manuring with lime in some soils has thus in part been explained. In the Belgian Department of the Paris Exposition of 1867, there was a soft, friable and porous limestone with the peculiar designation of "*calcaire a nitrification, production, naturelle de nitrates pour l'agriculture,*" accompanied by the assertion that this limestone was of the most recent formation, and, according to the unanimous decision of all geologists, was found in Europe only in three places, Cissy, Foix-les-Caves and Lanaye in Belgium. The commendation of this stone is as follows: "This nitrate (nitric acid salts) is produced by the influence of the atmosphere upon coral lime, and the exposure of limestone is sufficient to produce the formation of nitrate.

The essential conditions in the acceleration of this nitrification are:

1. The presence of limestone;
2. The great quantity of drift admitting the free passage of air;

3. The decomposition of vegetable and animal matter;
4. A certain degree of warmth and dampness.

These conditions are produced when manure and coral lime are laid lengthwise in layers over each other, and in truth a sort of saltpeter hut is produced. The application of this discovery, which we owe to modern chemistry, was indicated as early as 1849 by Mr. Malagutte, deacon of the faculty of Science at Rheims, in these words: "The farmer will some day fix the carbon of the atmosphere and change it into a nitrate, which is one of the most powerful manures."

It is true, that the foregoing directs attention to the great importance of nitrates for agricultural productions, and to the means to be used for that end, and it must be conceded that the farmer is enabled in a great measure to increase the capital of carbon on his farm. But it sounds like frivolity in the use of scientific terms applied to industry or like great want of knowledge and superficiality, when it is said here, that by this lime-stone, the free carbon of the atmosphere can be so manipulated as to assume the form of nitric acid.

The cause of this formation of nitric acid can only be found in the union of lime with animal and vegetable matter, if the analyses of lime-stone is otherwise correct, viz:

Carbonate of lime.....	96 per cent.
Phosphate of lime.....	2 "
Clay, earth and sand.....	2 "

100

The fresh water lime of Senglern near Gottingen, consisting almost entirely of carbonate of lime, and which is so important in its application to the red sandstone soils of southern Sollings, say from one to two hogs-heads per acre, that it exercises the same influence in the formation of nitric acid in these soils, as if they were manured by the celebrated lime-stone of Belgium, and the meadow-marl of Burguffeln, near Cassel, derived from a bed of shell-lime, humus and shells, contains far more qualities for the formation of nitric acid, than this manufacturer of nitric acid. That the great quantity of nitrate of lime must operate beneficially on vegetation, is readily understood, and this limestone of Belgium will compare with the marl of Rosche, which contains 0.44 per cent. phosphoric acid, (Erdman) or with the marl of Evendorf, near Solton, recently examined by Mike, and which contains 0.55 per cent. of phosphoric acid.

On the other hand, a soil in which the alkaline carbonate earths appear only in small tracts is far more susceptible to the formation of acid combinations of humus, which combined with the oxide of iron exhausts the oxygen of the atmosphere, in the soil, limits the beneficial influence of the

air upon the soil and injures the growth of agricultural plants, especially in soils rich in clay, and those with fine grained sand and great qualities for retaining water. The organic substances change the oxide of iron, which by the name of concentrated carbonic salts, is soluble in water, but causes the combinations and accumulations of iron in the sub-soils, makes it compact and unfriable, locks it up, as it were, so that this important class of earths becomes unpenetrable to the roots of plants and is of very little use as food for plants. The artificial exposure to the atmosphere for such soil is cultivation, and its mixture with lime, marl, wood ashes and the like, regulates its disintegration for the benefit of plants. These meliorations however, can be executed only in a limited degree on account of high prices, for liming adds only $\frac{1}{2}$ per cent. of lime to the surface soil, and its influence upon the sub-soil is exceedingly small.

The nutrition of coarse fodder, such as hay and straw raised on such soils, and whose acidity has been practically neutralized by artificial application of lime, is so different in comparison with fodder raised on a sound, healthy, lime soil, free from acidity, that a corresponding nutritive effect can only be produced by additional quantities, or by uniting concentrated food with it, both of which increase expense, and these are also peculiarities that are regarded as little by farmers in the purchase or renting of farms, or by chemists in the selection of hay on which to make experimental inquiries as to its nutritive qualities.

All these conditions are so important, applied to the value of most soils, that a small proportion of lime facilitates the cultivation of plants in so much higher degree, as the soil by nature is the more "locked up," and this is, therefore, an important factor in the analyses of the soils. Thier says "its presence is, therefore, even in small quantities, worthy of notice." The division of the soils in those which contain, and those free from lime, (*avec et sans calcaire*) expresses, therefore, an important difference for agriculture.

Enquiries respecting the value of humus have been made. Humus being the remains of former organic structures, whose elements, in the form of nutrition for plants, are found in the atmosphere in great quantity and generally distributed, the enquiry has been pertinently made why so many black soils rich in humus are productive, those poor in humus are unproductive. The investigation demonstrates that it is found very difficult clearly to separate cause from effect, and so much the more, as by the term, humus, the most various things may be included.

The views entertained on this point are, therefore, yet exceedingly diverse. If, in the sense of the old school, humus is understood to be the product of the decomposition of stable manure, the ingredients of which were formerly not very well understood, every one will concede that the richness of it is very important. According to this theory it contains

every nutritive quality for plants, and this must clearly have been the opinion of Thaer. Thaer used the word humus, as it was formerly customary to designate, drift or alluvium, and to avoid misunderstandings, he defines "the condition of each rich soil upon which its fruitfulness depends, and as it produces especially the food for plants as far as they depend on the soil for it." (*Rational Agriculture*, p. 126.) "The productiveness of the soil, indeed, depends entirely upon itself, for, with the exception of water, the soil alone furnishes the plant its food." It is "a combination with carbon, hydrogen, azote and oxygen, to which a few others assimilate themselves in small quantities, phosphorus, sulphur, some pure earths, and at times various salts." (*A. A. O. S.* 127.) It is "a production of life, and a condition of life," "it furnishes the food for organism." With the terms "poor, medium, rich," Thaer also includes the quality of the soil as to its combinations that must enter the plant, and are necessary to its growth and development. Thaer never anticipated the value of the mineral substances in this (so-called) humus, and he, therefore, in order to ascertain the quantity of humus, advises that the soil be perfectly dry, and then subjected to a heat a little above the boiling point; the loss caused by the heat proves the quantity of humus. Of course, the volatile portions only of the humus, can be intended here, for he says "the soil may be often very rich in acid humus, and yet be poor in fertility." All this proves only, that humus thus defined, is an idea undefined, and in this respect useless for all scientific purposes.

Chemists have agreed to define humus to be the remains of decomposed cellular matter, or more generally speaking, the combinations of carbon with water. The question, whether humus, thus defined, whose presence confers the color of the soil, is of any value to the soil, has, in view of certain physical qualities and its relations to warmth and moisture, been most generally conceded, but its nutritive quality for plants has for a long time been denied. According to this view the plant is left to draw its carbon from the inexhaustible quantity in the atmosphere, and a store of carbonic acid in the soil is, therefore, useless. This idea has been the one which most generally obtained at one time, amongst agricultural chemists, and we hear it often repeated, even to-day, without discriminating between the effects of carbonic acid furnishing carbon, and what is produced by it in other respects. Whatever may be conceded on the one hand as to its relations, we are obliged to deny on the other. Chemistry and physiology have produced the proof, that well developed plants can be grown in a clay that had been subjected to great heat, freed from all humus, and without artificial application of carbonic acid in solution with water, and as exact too, as these experiments will ever admit of, the ingredients of the seed being always taken into ac-

count, and the separation of carbonic acid by means of the roots dispensed with fixed quantities. The scientific proof, that no care is required to supply the demand of the plant for carbon, in all experiments of this kind, lead to the conclusion that it is not necessary to add humus to the soil, and that it is not worthy of notice, at least so far as the nutrition of the plant is concerned, and that the application of mineral nutritive substances for plants is the only consideration of importance. The combination in the soil, which effects a solution and transfers it were not regarded.

Only since Liebig has called attention to the extent of the discoveries of Way and Thompson, of the power of absorption in soils for the most important food for plants, have we been led to contemplate the value of soluble agents in the soil, and their importance in conveying food to plants. The absorbent power of soils is a fact to which the Italian Gazzeri invited attention in his essay on manures in the beginning of the present century, and the great importance of these phenomena in the household of nature ; their diversified relations to the products of disintegration and solutions, as the component parts of the waters and of oceans, and further led us on to a clearer conception of the whole organic creation. Since that time, humus and carbonic acid have been regarded more than heretofore as solvents, and Liebig himself, in his *Letters on Chemistry*, of the year 1865, p. 370, extols this importance in the following words :

“The effect of mineral manures is increased in a remarkable degree by the addition of sawdust, and there is not the least doubt in my mind, that the principal cause of this increased effect must be sought in the carbonic acid created by the decomposition, which in this case is less effected as a nutriment for plants, but preferable as a solvent agent for phosphates (phosphoric acid, lime and magnesia), and for the transfer of the neutral carburetted alkalies and earths into carbonates and the disintegration of silicates. This carbonic acid is the medium which nature furnishes to transfer the nutriments into the organism of the plants, for the phosphoric acid and earthy carbonates are in and for themselves soluble in water only, when the water contains carbonic acid ; nor is the quantity of carbonic acid in rain water sufficient for the short time of the growth of summer plants, to prepare the relatively and indispensably necessary large quantity of mineral ingredients to that soluble and suitable condition requisite for the maximum of their development.”

It would be very desirable if many chemists and practical agriculturists, who acknowledge Liebig as their authority, would also take this pertinent sentence of their master to heart in all its bearings and consequences, and no longer sin against a fundamental rule of agricultural production, of which Boussingault, the cautious agricultural chemist of France as early as 1856, (*Agriculture in its Relations to Chemistry*, IV, 1856, pages

179 and 180,) remarks, "that an essential part of the effect of manure of organic origin must be ascribed to this exhalation of carbonic acid gas." According to Boussingault, this carbonic acid is essential to the nutrition of plants, and manure is imperfect that is wanting in these ingredients (humus). Each particle of manure, humus and mould may be compared to a chimney, from which carbonic acid evolves continually, in whose lower atmosphere the roots live and develop.

Closely connected with the addition of carbonic acid compounds to the soil, is that of nitrogenous principles, and it is difficult to decide with both elements in what degree their combinations are active and necessary as nutriment or solvent.

When we notice how wild plants, without any artificial addition of nitrogen, annually produce so abundantly, we are led to the conclusion that such an addition is of little importance, and that the application of mineral substances only as nutriment of cultivated plants is essential.

And this conclusion is apparently justified by the fact, that plants have been produced in a soil entirely freed from all nitrogenous compounds. But in very few departments has science overstepped her legitimate boundaries so much as in the generalization of conclusions formed from isolated experiments, or from the growth of grasses and forest plants, upon the great variety of conditions of production, as we find them in ever varying nature; and this would have happened less frequently, had not scientific men too often, in the form of *a priori* conclusions, attempted to give science practical application, without a proper knowledge of the conditions and necessities of practice. To this only he is entitled who has an accurate knowledge of the conditions to which science is to be applied. It is proven by numerous experiments, that some of the most important nutritive principles of plants are far less soluble in pure water, than in such as hold ammonia or the nitrates in solution, and it can not be doubted that this fact is also applicable to what happens in the soil. I need here only to refer to the beautiful experiments of Diedrich, relating to soil and stone (not influenced by the atmosphere). But the nitrogenous compounds have proven themselves equally important to a vigorous development in such experiments, where the mineral nutriment existed already in solution, as where trials were made of growing plants in watery solution; and it is especially nitric acid, whose great importance these trials have established. And if this is already proven in such experiments, where absorption and assimilation take place in a more regular manner during the period of vegetation, how much more must the necessity for a sufficient supply of nitrogen exist, under circumstances in which the period of vegetation in the above defined sense is very limited. The cultivation of a sandy soil may be taken as an example of this. No

body doubts that in most cases its dryness, and the periods of stagnation of growth caused thereby, make a considerable average yield impossible; while sandy soil, that is moist or situated in a damp climate, may be very productive. In such sandy soil the real period of growth is very much shortened, though the development during the same is often wonderfully rapid, and an apparently stunted fruit may, under favorable circumstances, recover in a very short time. The yield depends mainly on how much of nutriment, essential to the full development of the plant, is available during this period. The carbonic acid gas, which develops in the soil, may have to be looked upon as an important nutriment of the plant, besides the nitrogenous compounds, though the former, under other circumstances, might be of far less importance. It is a well known fact, that the practical farmer, who cultivates sandy soil, takes great pains to furnish it with manure, containing as much organic or humus forming substances as possible.

In the same manner does the luxurious vegetation on any soil in certain periods point the farmer to the importance of furnishing the soil all the ingredients of plant nutriment. Whoever had occasion to observe the growth of cultivated plants in an unusually dry year, as in 1865, must have noticed, how in long periods even on very fertile soil, the growth came to a standstill and the vegetation died, but how after rainfall certain plants, as turnips and potatoes in a very short time in the fall developed considerably yet. In his treatise on the condition of agriculture in the Province of Brandenburg, Koppe says in favor of potatoes, that "they even with long continued drought do not entirely fail, and frequently late in summer after a penetrating rain, yet recover, when it had the appearance, that they would yield nothing. The quantity of the crops depends with many cultivated plants, mainly on whether after seeding, the germ of the young plant, finds favorable conditions of development, to enable it afterwards to resist noxious influences. This is an important point of view, to decide the question whether fallowing is advisable or not, and is decisive as regards manuring, in so far as the developing young plant must not be wanting of any nutritious material. For the same reason the yield of many plants of several years growth cereals and feed plants depends in a high degree on their rapid development in the spring, covering the ground, receiving numerous organs of assimilation (roots and leaves) and becoming soon invigorated, to resist the effects of unfavorable weather and other noxious influences. In the culture of tropical plants within our temperate zone, the conditions of development being frequently unfavorable, it is certainly in the interest of the absorption of carbonic acid during the period of growth, that producers of this gas are

present in the soil. For this reason our flower-pots are filled with a mixture of sand and earth rich in humus.

The precept of Boussingault, to arrange the rotation of crops in such a manner, that the atmospheric ingredients are utilised in the highest degree, has its significance in this too, that thereby indirectly in the course of time these atmospheric ingredients become incorporated with the soil, where they serve as nutriment *and solvents*, and the farmer, who increases the production of straw on his farm accomplishes that. Of the plant nutriment present in the soil a larger proportion is offered to the plant in a more soluble form, and that consequently during the period of growth a larger proportion is absorbed.

These considerations for the improvement of a farm must be the more important, as the increase of productiveness is the aim of most farmers and they point out the cheapest and most profitable way to attain this object in many cases.

The improvement of the soil and the increase of crops, however, is in such soils easiest attainable, in which humus substances are present in certain proportions, and the dark soils, with a certain limited admixture of humus, in the sense of the modern school, are therefore more valuable, everything else being equal, than such as are wanting in this organic residue. As a rule however this color indicates also the presence of numerous soluble mineral nutrient principles, which do not influence the color, but are of the highest importance as regards growth, and the origin of which must therefore be taken in consideration in examining a soil.

The causes, why the dark soils prove the most profitable for agriculture are therefore, first, the dark residue of decayed organic substances, but also second, and in a prominent degree the colorless mineral remains of former plant production, and to this must be added the fact, that the situation of such soils insures frequently favorable physical conditions as to depth, humidity and the like.

Everywhere these dark remains of organic substances, rich in oxygen and nitrogen facilitate the cultivation of the soil, if not too abundantly present, even if they only contain few mineral ingredients. The latter may be present in an almost insoluble form, as for instance phosphoric acid in several combinations with iron by whose transfer to the sub-soil of peat and sandy ground, the surface soil necessarily must become impoverished.

It is a great progress in our knowledge, that by the discovery and careful investigation of the absorption of the soil, as relates to the nutrient ingredient of plants; the value of the carbonaceous and nitrogenous combinations in the soil has become more known. As the practice of centuries in this direction has received its scientific justification, so disappears the

distrust of practical men in the natural sciences in their application to agriculture, and their importance to this great field of industry is more and more appreciated. One can therefore only hail with pleasure the above cited remark of Liebig's, which will contribute to remove the apathy heretofore existing between the representatives of science and practice. Expressions like this, "in theory this is true, but false in practice," which are a derision to natural laws, can only be regretted, and must be explained by this much to be regretted antagonism. The theory of Thaer of the essentiality of manure has found in science its correction, but also to a certain extent its justification.

If we intend to increase the fertility of different soils, we have to ascertain whether the addition of certain nutritious, or solvent matter is most necessary. Both are equally represented in stable manure. In very many cases the soil suffers from insufficient nutritious material, and the addition of a single one, *e. g.* soluble phosphoric acid salts, causes an enormous increase of yield. The experiment of Reuning, related in "Justus von Liebig and experience," proves this in a striking manner. In many other instances an increased addition of solvents, amongst which we have to count also carbonic acid and burnt lime, is of greater importance, and money would be illy invested in mineral manure. The solvents referred to are also mostly nutritious matter for plants, and their solvent power is for the most important mineral nutritious substances of the greatest importance, as has been proven by Liebig in regard to the phosphates.

The nutritious matters derived from the atmosphere, are at the same time the most important solvents, and by means of the rotation of crops, we are enabled to utilize them more or less. Koppe tells of Ober Amtmann Lueder, who is a farmer very decidedly in favor of rotation, and who cultivates two farms, each divided into nine fields, of which, however, one gains in fertility and produces a larger amount of manure as compared with the other; that he maintains that this is due to the fact, that the first has winter crops on three fields, while the other has only on two.(!)

For the melioration of a farm it is, therefore, of the highest importance to arrange the succession of crops in such a manner, as to cause thereby an increase in the production of straw.

There are, furthermore, on many places deposits of mould, pond-mud, peat and the like, rich in organic matter, by which the quantity of solvents may be very much increased. The carbonic acid, which develops from stable manure, has absolutely no higher value than that coming from mould, etc.

The communications of Walz of Hohenheim, relating to the favorable effect of fresh stable manure, deserves the attention of the practical farmer

in very many cases, and though he is not always able to apply it fresh to the soil, yet he may do much to conserve the organic ingredients, a duty which is too often neglected. The great importance of the method to mix stable manure in the field or on the dung heap with loam, marl, mould, pond-mud and the like, has been pointed out before, and it is mainly due to the fact that in this way the nitrogeous and carbonaceous compounds are better preserved, the soluble ones more bound, and the influence on the next crop becomes greater and surer, inasmuch as the loam and marl mixed with the soil offer the most favorable conditions for the formation of nitric acid.

By the addition of lime and marl the formation of nitric acid is also increased, while other acids are neutralized, the transformation (decomposition) of organic substances hastened, the solubility of the mineral plant nutriment heightened, and consequently the yield vastly increased.

What has to be principally kept in view in our attempts to increase the production of a farm? This question presents itself often with great force to the thinking farmer, and the correct answer is of commanding importance to his very existence. There are farmers who believe that chemistry, and the experience gained on the black soil around Magdeburg, teach them that nothing but the profuse addition of mineral manure will increase the yield everywhere, but they find themselves mistaken. There are others that cannot bring themselves to believe that very often farms are unproductive because of an insufficiency of mineral ingredients in the soil, without which no crop can be made, and that, therefore, their old mode of straw manuring does not help the matter. Others again, who, influenced by the good effect of deep cultivation on some soil, believe that they also must plow up the subsoil to the depth of 8, 10 or 12 inches, may actually deteriorate the soil thereby, and for years diminish its productiveness.

Then, again, there are some who believe that their success depends on costly farm implements, imported from England, and expensive buildings, and forget that one of the main points in successful farm management consists in bringing the end to be attained in proper relation to the means in hand. Others yet invest in much and costly stock before the farm is in condition to furnish suitable and abundant feed, and they can maintain it only at great sacrifice. Many farmers have lost their capital by the improper application of mineral manure, or have so increased the cost of their farms by its untimely and unnecessary use, that they never can receive an adequate return, and even the best is, under such circumstances, unable to make his capital pay reasonable interest. This can be no more the case with a manufacturing establishment where the

value of the articles manufactured is out of proportion to the capital employed.

The common cause of all this blundering is unacquaintance with the nature of the soil, its peculiarities and the conditions of its fertility. The greatest mistakes possibly to be made in farming are based on erroneous presumptions, as regards the soil and the wrong treatment of the same. Therefore the proper succession of crops is of such eminent importance, therefore the treatment and increase of manure of all kinds is the most important chapter in the whole A B C of agriculture. The nature of the chemical and mechanical influence of manure on plants is, aside from thorough mechanical working of the soil with implements, of controlling influence as to yield. The most careful examination of the soil is, therefore, the most important prerequisite at the beginning of farming, and the scientific farmer ought to spare no pains nor neglect any means that contribute to give him a correct knowledge of it.

Boussingault examined, in Bechelbronn, stable manure of 30 horses, 30 cows and 20 hogs, and it contained, in a medium state of rottenness—

Carbon	7.41
Hydrogen	0.87
Oxygen	5.34
Nitrogen	0.41
Ashes	6.67
Water	79.30
	<hr/> 100.00

When such manure is plowed under immediately after spreading, 100 lbs. of it will be a source of 27.17 lbs. carbonic acid, or a quantity of 20,000 lbs. per Prussian morgen would be equal to treating this area with 5,434 lbs. carbonic acid (free or in connection with a base.) The solvent influence is, however, greater, because the humus combinations, developing before the finally resulting carbonic acid, all favor decomposition. Stable manure contains, according to Wolf, as an average, 0.53 per cent. nitrogen in the form of ammonia or nitric acid. If we assume that the plough turns (in a Prussian morgen) 1,500,000 lbs. of soil, they would receive, according to the above estimate, 0.36 per cent. carbonic acid and 0.006 per cent. nitrogen in the form of ammonia and nitric acid. If manuring is repeated every third year, the supply of carbonic acid for each year would be 0.12 per cent., and of nitrogen 1.0023 per cent. If we take 50 cwt. as an average supply for each year, (to the morgen) this would yield, according to the above estimate, 370.5 lbs. carbon and 26.5 lbs. nitrogen. It depends on the nature of the soil, the climate of the year and local conditions, how much of these ingredients are developed each year. The farmer, how-

ever, has it in his power, by artificial influences, working the soil and the like, to hasten the evolution of the gases and increase the crops. 100 lbs. dry wheat straw, in the form of stubble, plowed under soon after harvest, are equal to a source of 180 lbs. carbonic acid, which is not without importance to the solution of the ingredients of the soil. By early hauling stable manure, protecting it on the dung heap against the influence of the atmosphere by covering it with loam, pond mud, mould, peat and the like, its amount of carbonic acid and nitrogen is reserved and even increased.

Assuming that a certain amount of manure of a medium degree of rottenness contains 1500 lbs. carbon and 100 lbs. nitrogen, the application of loam, etc., in the manner pointed out, will increase the quantity very materially. The addition of 1000 lbs. of dry humus, in the form of peat, to the above quantity of manure, increases the carbon about 400 or 500 lbs., and the nitrogen 10 lbs. and more, and instead of the above 1500 lbs. of carbon and 100 lbs. nitrogen, the soil would receive 2000 lbs. carbon and 110 lbs. nitrogen. The ammonia and nitric acid formed from mould are equal to the compounds of like name, formed from protein, urea or hippuric acid. The great effect of manure from fattening cattle is owing, aside from the greater amount of nutrient principles, (especially of nitrogen), also to the large amount of solvents, of which nitrogen is, too, a very important one, and both these circumstances unite to improve a farm with manure from fattening cattle very rapidly.

On thin, sandy, or cold, inactive soil, mineral manure frequently shows little effect, while manure from sewers, containing all nutrient and many solvent principles, increases the yield enormously. In this way immense crops are raised on the thin, sandy plains near Frankfort-on-the-Main and the farm, Gutlenthof, near Frankfort, of 2,000 acres, depends entirely for its manure on the sewers of the city, so that there are almost no cattle kept. Formerly, when the farm was differently organized, and a large amount of cattle kept, it was not by far as remunerative. In the soil of Anna-berg, near Bonn, mineral manure was without effect, while the sewerage from the city made it productive. Formerly efforts were made to improve farms by the purchase of straw and liberal bedding of cattle, and this method is a proper one yet in very many cases, provided mineral manure is not neglected. By the purchase of straw, oil-cake, bran and the like, and their employment in fattening cattle, a farm may be quicker and surer improved than by the use of mineral manure. Carbon and nitrogen are, therefore, exceedingly important ingredients of manure.

Experience teaches that carbonic acid unquestionably dissolves the silicates of soda, potash and lime, (basalt, for instance, exposed to the atmos-

phere for some time, foams, when an acid is added,) and nitrogenous compounds, brought in contact with insoluble phosphates, make them soluble, and therefore larger quantities become available at certain periods of growth. Science cannot deny their great importance, though their value must be different, according to the nature and variety of soil and climate.

The view entertained by some, (advocates of mineral manure,) that a source of carbonic acid in the soil is of no importance, and that the means by which carbonaceous and nitrogenous compounds are added to the soil should be neglected, is therefore erroneous, and it is one of the duties of teachers of natural sciences to dispel this error.

The deduction of Reuning, in his very valuable treatise, "Justus von Liebig and Experience," (in which he so beautifully explains the relation of theory to experience,) "that the addition of nitrogenous compounds to the soil is of little value," is *not justified* by the experiments related. This would be the case only, if in these experiments all conditions had been perfectly alike, except the addition of nitrogen. The doctrine of Maron, that nitrogen in manure deserves only subordinate attention is clearly disproven by experiments made in watery solutions; and it is certainly unsafe, in consideration of the great diversity in the condition of soil and climate, to generalize from experiments made on the soil of Japan. Maxims which are correct, when applied to a farm carried on on a large scale may be false, when applied to small concerns and on different soil. The cultivator of beet-root in the region of Magdeburg would fail most anywhere else.

"We must, above all, take existing circumstances in consideration. If we do, we will find that we have to use different means to improve our fields from those that serve to keep those already improved in a high state of cultivation."—(Koppe, in the appendix to his "Revision of the Different Systems of Agriculture.")

It would have been an occurrence of eminent importance for Prussia, if, instead of the rocksalt layer found in the province of Brandenburg, a deposit of phosphates had been discovered; but it is equally certain, that for the cultivation of its dry, sandy soil, the loam and marl found at a certain depth, to which Major v. Bennigsen Forder has called attention, is of greater importance, and the improvement of the soil can only be accomplished by mixing these two ingredients with the sand. For the province of Prussia, the discovery of cheap phosphates would be very important; however, they could in most cases only be made useful after drainage, and the application of marl, lime and carbonaceous and nitrogenous compounds.

Such scenes, as occurred in 1860, at the meeting of German farmers and

forest cultivators between the farmers and the advocates of the Japanese system concerning stable manure and its ashes, (burnt straw,) and which developed strong feeling for or against the exclusive use of the same, only lead to misapprehension and neglect of the undeniable truth of Liebig's teachings.

Just as it is one-sided and erroneous to conclude from the unquestioned casual connection between fungus and certain diseases, that *all* diseases of animals and vegetables are of a fungous origin, without having arrived at this conclusion by a thorough and exact examination, so it would be equally objectionable to explain the phenomena by the mere presence or absence of certain chemical substances that really depend on physiological laws and a combination of circumstances, and that can only be understood with the aid of these laws and a careful weighing of all the circumstances. We must never lose sight of the great object of natural philosophy to investigate the co-operation of forces.

The follower and advocate of Liebig's doctrine, who aims at improvement in agriculture, must at the same time lay stress on the importance of carbonaceous and nitrogenous compounds, for only in combination with them is a rapid change of mineral ingredients and a corresponding increase of crops possible; and the doctrine of the necessity of mineral plant nutriment is in no way opposed to this. The return in manure in mineral plant nutriment, withdrawn from the soil by the crops alone, does not insure an equal yield, if not at the same time nitrogenous and carbonaceous compounds are furnished; and it is necessary, while considering the laws of statics as regards mineral plant nutriment, that we do not forget and neglect all other conditions of growth in our soil.

The method which Thaer employed, (see his description of the Mœglin Farm) viz: to increase the capacity for production of the soil, and which he considered the most important point in farm management, is based on the idea of increasing the nitrogenous and carbonaceous compounds, by which at the same time the mineral ingredients are brought to a more rapid solution and absorption. This method has and retains for the farmer, who aims to invest his capital profitably, its great importance; however, with a wise use of the resources at our command, we can accomplish this more rapidly now than formerly. Careful analyses of the soil will give the educated farmer important hints how it is to be done, what value there is to be placed on the addition and increase of solvents by way of succession of crops, &c. They correct erroneous views, give certainty and system to his acts, especially if they are aided by experiments made with different kinds of manure.

It is wrong to make this a party matter, and to antagonize Liebig and

Thaer. Indeed, it follows from the definitions of "Humus," by Thaer, referred to above, that he includes in this term all plant nutriment, contained in the soil, and we must acknowledge the great importance of the more precise definition by Liebig. If a farm has exhausted, in the course of time, the atmospheric principles, and they are restored by the application of stable manure, it is plain, that by also adding the necessary mineral ingredients, the conditions of growth and fertility remain the same. The equilibrium may be lost by not adding the necessary mineral nutriment as well as by neglecting the atmospheric conditions of healthful vegetation, rotation of crops, manuring and the like. A farm may be deteriorated by one or the other neglect; or, what is worse, by both together. It takes frequently longer to remedy the latter evil than the former, and the farmer and renter fears it more than the other.

The chemical analyses of the soil must show which ingredients of plant nutriment are present in greater and smaller quantity, and how easy they may be made available by solvents. For this purpose the solvent effect of pure water, carbonic acid, of cold and hot muriatic acid, &c., on the soil is investigated, and we receive thereby an insight into the action of the chief ingredients of the soil.

By the general agreement of chemists to use the same method and reagents of the same strength, we have a means of comparing different analyses, which was formerly not the case, when analyses settled the quantity of nutritious ingredients alone. In this way points of comparison between the known and that which is less known are found.

However, we must not expect that the solubility of ingredients and absorption by the plants, stand in direct proportion to that found in analyses, for the peculiar activity of the soil is very different; and, besides, the roots of plants exercise an influence, since they develop and spread, more or less, according to the physiological laws of the plants, the nature of the soil, and the greater or less abundance of nutriment.

The farmer is enabled to increase the solvents in different ways; and since on any one farm there are usually different kinds of soil, he will receive valuable hints from a careful analyses as to the utilization of them, according to their distance from the centre of the farm, as to the application of nutriment here and solvents there; as to the mixture of the different kinds of soil and the rotation of crops. He, also, receives information whether there are too many solvents, too many nitrogenous compounds, too much humus, combined with a deficiency of mineral ingredients, whereby a too luxurious growth is produced, and disease is engendered by an excess of nitrogenous ingredients and the failing of the crop.

The agricultural society of the principality of Halberstadt has repeatedly called attention to this feature.

When the physical conditions of a soil are unfavorable—for instance, a strong, tough, impervious clay, poor in plant-nutrient, lime and humus, as is found on the leas in England—what hope can the farmer entertain to improve such a soil and prepare it for abundant yield? On the other hand, if there is an abundance of plant-nutrient in the soil, even if all other conditions are equally unfavorable, the improvement is comparatively easy. According to the investigations of Freiherr von Schorlemer, of Westphalia, the value of different specimens of soil, selected for the purpose of equalization of taxes, stands in a certain relation to the quantity of phosphoric acid they contain.

A very heavy clayey soil contained in 100 parts 0.025 parts phosphoric acid and 1.38 parts humus. Who will doubt, that the same soil would be more valuable with 0.1 per cent., and that with 0.2 per cent., 0.3 per cent., or 0.4 per cent., it would correspondingly increase in value? With 0.025 per cent., we have in 150,000 lbs. arable soil, 375 lbs. phosphoric acid; with 0.1 per cent. soil, 1,500 lbs.; with 0.4 per cent. soil, 6,000 lbs.

Freiherr von Schorlemer had a thin, moist, sandy soil, poor in humus, analyzed, and 100 parts of the dried earth contained only 0.0006 parts of phosphoric acid; another sandy soil, in a drier situation, had only 0.00035 per cent., and a third specimen showed traces only. By such investigations, the characterization of soil is materially advanced and its value established. As, for instance (after Schorlemer):

DISTRICT LAER.—CLASS I.

Surface soil: 12 inches, consisting of sandy loam, rich in humus; open, dry situation. Sub-soil: percolating loam or disintegrated limestone.

The soil contains 0.0988 per cent. phosphoric acid, 1.34 per cent. humus, 1.77 per cent. oxide of iron, 0.84 per cent. lime, and 0.053 per cent. magnesia; or,

DISTRICT LAER.—CLASS VI.

Surface soil: 6 inches; gray, poor sand, very dry. Sub-soil: sand, mixed with iron ore.

This soil contains 0.0006 per cent. phosphoric acid, 1.80 per cent. humus, 2.16 per cent. oxide of iron, 0.72 per cent. lime, 0.015 per cent. magnesia.

Two specimens of clayey soil, analyzed by Voelker, contained in 100 parts:

	The one.	The other.
Moisture	7.03	4.01
Organic substances.....	12.58	8.51
Oxide of iron and clay	11.10	11.24
Phosphoric acid.....	0.48	0.06
Sulphuric acid	0.11	0.19

	The one.	The other.
Lime and magnesia	0.46	0.46
Soda and potash	0.52	0.45
Insoluble substances	67.72	75.08
	<hr/> 100.00	<hr/> 100.00

The ingredients of these two soils differ very little, except in the matter of phosphoric acid, of which the one contains 900, the other 7,200 lbs. to the 150,000 lbs. No thinking farmer will estimate the larger amount of this acid as valueless for cultivation; and this value would appear the more striking, if the solubility had been taken in consideration. In the soil containing 0.48 per cent. phosphoric acid, by increasing the quantity of solvents, the farmer will make a larger amount of this most important plant-nutrient available, than in the other containing only 0.06 per cent. This increase of solvents is accomplished by artificial addition, rotation of crops, and preservation of the organic ingredients of manure on the dung-heap. It is said, that on the soil containing the larger amount of phosphoric acid, the addition of lime had a very favorable effect, which may be explained by the formation of nitric and carbonic acid at the expense of the organic ingredients, which are indeed most effective solvents of the phosphates. Stohmann examined a soil near Weende, and found on it more than $\frac{1}{3}$ per cent. phosphoric acid, 100 cwt. of which added to manure, will add to its phosphoric acid more than 33 lbs.—almost equal to the addition of 3 cwt. of guano.

The shell limestone soil near Assumstadt, in Wurtemberg, contains, according to Wolf, 0.309 per cent. phosphoric acid; the sandstone soil of the Jura, near Wasseraalgen, 0.203 per cent. With 100 cwt. of it mixed with a certain quantity of sheep manure, the quantity of phosphoric acid is increased 30 resp., 20 lbs, and it is certain that this quantity is partly made soluble by the influence of the liquid manure.

The mud deposited by the Saale, near Jena, contained, in 1865, according to Reichardt—

Clay, and insoluble in muriatic acid	75.850 per cent.
Organic substances, with 0.11 per cent. nitrogen	6.243 "
Alkali.....	57

Soluble in muriatic acid :

Chlorates.....	0.036 per cent.
Silicates	0.580 "
Gypsum	0.210 "
Oxide of iron and mang.	2.120 "
Oxide and sub-oxide of mang.	0.330 "
Carbonate of lime.....	9.316 "
Carbonate of magnesia.....	2.228 "
Phosphoric acid	0.270 "

With every load of such dry earth the soil receives 3-4 lbs. nitrogen, 8-10 lbs. phosphoric acid, 340 lbs. carbonate of lime and magnesia, and 180 lbs. organic ingredients, and the farmer who lets the easy floating substances of his soil wash away without taking care, that they deposit again in ponds, from whence they may be returned to the fields during the year, would be frightened if he had a correct idea, how much his fields lose during the year. It is impossible for man to give fertility to the atmosphere, the rain or the weather in general; he is too weak for that; but it is always possible for him to impart fertility to the earth. If he is able to furnish the soil with the ingredients of plant nourishment, to make them assimilable and to keep a sufficient supply, then the fertility of the soil is insured. Mayer von Kupferger said, even in the last century: "The principle on which the mixing of soils should take place is, to mix such, that are of different composition, that each of them receive, what it does not already possess. My object is only to tell the farmer, that to increase the fertility of his fields, he must mix his soils and to teach him what soils are most profitably mixed."

A careful chemical analysis of the different kinds of soil would convince the farmer, that there is great truth in these sentences, and that great advantage can be gained by paying attention to them. The unacquaintance with the composition of the soil makes a proper choice difficult, and the great difference in the ingredients, and also in the applications explains the diversity of results reached by different farmers.

One-half per cent. phosphoric acid in a soil is a great treasure, even if at present not much of it should be available. I know a clayey soil, mixed with lime and resting on a layer of limestone, but rich in phosphoric acid; which is nevertheless improved by having more lime added. The farmer applies lime to an exhausted clover-field, to restore its fertility; yet it is known that clover, which is rich in nitrogen, is less influenced by nitrogenous substances than by mineral ingredients. Where they (mineral ingredients) are wanting or deficient, solvents are also of little avail and it is one of the most reprehensible things in farm management, to carry the extraction of mineral ingredients too far without making an adequate return. The cultivation of forest soil for years without manuring, and the one-sided addition of marl, have given sad examples of this to many farmers.

The advance or surplus of nutriment in the soil, so necessary for a vigorous growth, can only be restored by great and costly sacrifices and the exhausted and impoverished fields need not only nutrients, but also solvents in considerable quantity.

A certain soil, rich in humus and examined by Hellriegel, contained 29.68 per cent. organic substances, 0.21 per cent. phosphoric acid, and

0.13 per cent. of nitrogen. Another contained 0.04 per cent. phosphoric acid and 0.13 per cent. nitrogen. In a load of the first kind of soil is more nitrogen, than in a load of stable manure. Who could here make a proper selection, without a careful analysis? Another clay soil, examined by Voelker, contained only 0.01 per cent. phosphoric acid which would be only 150 lbs. to 1,500,000 lbs. of soil. Fifteen crops of wheat, however, would exhaust more than this amount. Such soil is poor on account of deficiency of some of the most important nutrient principles, and if other conditions are favorable, an addition of phosphates would increase the yield.

Grouvier made examinations of thirteen different soils, and computed the following average per cent:

Soluble mineral salts.....	11.448
Humus.....	7.037
With nitrogen.....	0.155
Potash.....	0.210
Soda.....	0.139
Lime.....	1.806
Magnesia.....	0.326
Oxide of iron, manganese and clay.....	5.369
Phosphoric acid.....	0.126
Sulphuric acid.....	0.036
Chlorine.....	0.005
Watery extract { Mineral.....	0.061
{ Humus.....	0.044

He compares this with the soil of Salzmünde:

Sand and clay.....	82.45
Mineral matter soluble in hot muratic acid.....	14.12
Humus.....	3.43

MINERAL SUBSTANCES.

Potash.....	0.635
Soda.....	0.127
Lime.....	1.677
Magnesia.....	0.687
Oxide of iron.....	2.835
Oxide of manganese.....	0.030
Clay.....	5.096
Sulphuric acid.....	0.059
Phosphoric acid.....	0.059
Silica.....	1.785
Carbonic acid.....	0.801
Chlorine.....	0.002
Loss.....	0.033
Nitrogen.....	0.108
Watery extract (dissolved in 4 times the quantity of water.)	
A. Mineral substances.....	0.047
B. Oxygen substances.....	0.025

The diluvial marl soil of Salzmunde, indicating its northern primitive and calcareous formation as its origin, contains three times as much potash and not half as much phosphoric acid, as the average above, from which it follows, why in this soil the addition of the phosphates is so effective, while that of the potash salts shows so little effect, and why the super-phosphates and Peruvian guano are so much used.

If the soil contains noxious ingredients, the remedy will suggest itself through the knowledge derived from analysis. Especially interesting are in this connection four examinations, made by Voelcker.

- A. A soil surcharged with chloride of iodine and nitrate of potash.
- B. Peat soil of Meare.
- C. Soil from the Harlem sea, with many sulphates of iron.
- D. Sterile soil of Sandy in Bedfordshire.

Moisture	10 86
Organic substances and hydrates	4.84
Oxide of iron and clay	11.28
Chloride of sodium	11.61
Phosphoric acid	2 35
Carbonate of lime	5.21
Nitrate of lime	2.32
Chloride of potash	2.31
Insoluble substance	49.22
Nitrogen, 0.24 per cent	100.00

By adding stable manure, or soil of different compositions, such soil could be made very productive. Three loads of it contain 235 lbs. phosphoric acid, 232 lbs. nitrate of lime, 231 lbs. chlorate of potash, and 24 lbs. nitrogen.

B. PEAT SOIL.

Organic substances and hydrates	97.760
Oxide of iron and clay	0.536
Sulphuric acid	0.051
Magnesia	0.144
Potash	0.131
Soda	0.065
Phosphoric acid	0.053
Carbonic acid	0.855
Silica	0.405
Nitrogen, 1.428 per cent	100.00

C. SOIL FROM HARLEM SEA.

Organic substances and hydrates	14.71
Oxide of iron and clay	9.27
Sulphate of iron	0.74
Bi-sulphite of iron	0.71
Sulphuric acid combined with oxide of iron	1.08

Gypsum	1.72
Magnesia	0.73
Potash	0.53
Soda	0.32
Chloride of Sodium	0.09
Phosphoric acid	0.27
Insolubles (clay, &c.)	69.83
Nitrogen, 0.52 per cent	100.00

D. STERILE SOIL OF SANDY IN BEDFORDSHIRE.

Organic substances and hydrates	4.27
Oxide of iron and clay	3.84
Sulphate of iron	1.05
Bi-sulphite of iron	0.56
Gypsum	0.96
Potash and soda	0.47
Phosphoric acid	0.09
Insolubles (mostly sand)	87.91
	100.00

It has been proven by analyses, that we also have soils with large amounts of sulphate of iron, and before this is removed it is impossible for a considerable amount of nutritious ingredients to become available. In a strong and acid region (Knick) of the Eierstadt Moor, Stoeckhardt found 0.415 per cent. of phosphoric acid. The moors reached acid when containing 0.21—0.64 per cent. lime; alkali, when 0.87.

By adding stable manure a different soil could be made very productive. Three loads of it contain 235 lbs. phosphoric acid, 232 lbs. nitrate of lime, 231 lbs. chlorate of potash, and 24 lbs. nitrogen.

A marshy soil in the province of Groeningen imparted to water humic acid and carbonate of iron.

Prof. Cossa, of Pavia, Italy, investigated recently the influence of distilled water and water impregnated with carbonic acid on 37 different kinds of soil. Cold distilled water extracted from 0.064—0.688 per cent., at an average 0.1477 per cent. from the soil, the extract containing more organic than mineral ingredients. The water impregnated with carbonic acid extracted more in the proportion of 1, 1.790, with this additional difference, that the extract contained more mineral ingredients than the one made with distilled water.

Francis Schultze examined repeatedly watery extracts of a fertile soil of Goldberg, for the purpose of establishing a standard by which to estimate the continued fertility of the soil. The earth examined contained 4

per cent. humus and in all 0.204 per cent. nitrogen. Out of 100 part burnt earth he extracted by boiling in strong muriatic acid :

2.420 per cent. lime.
 0.308 per cent. magnesia.
 0.068 per cent. potash.
 0.078 per cent. soda.
 0.285 per cent. phosphoric acid.

By repeated washings with pure water he extracted out of 1000 grammes earth in succession :

1—0.535 gr. dry mass in which 0.0056 gr. phosphoric acid.
 2—0.120 " " " 0.0082 " "
 3—0.261 " " " 0.0088 " "
 4—0.203 " " " 0.0075 " "
 5—0.260 " " " 0.0069 " "
 6—0.200 " " " 0.0044 " "
 Together 0.839 mineral substances with 0.0414 gr. phosph. acid.

It results from this examination that a soil so rich in phosphoric acid and nitrogen, can give off phosphoric acid freely to plants for a long time. This is, however, also influenced by the physical condition and climate, and in comparing the result of analyses of the different soils, this must also be taken in consideration. Hayden examined two different soils and their subsoils, and found the following result :

	Muriatic acid.	Water.
Soil A.....	0.137 per cent.	1.0057 per cent.
Subsoil A	0.147 "	0.0056 "
Soil B	0.165 "	0.0053 "
Subsoil B	0.153 "	0.0019 "

And from a soil, which would give off to water only 0.0053 per cent. phosphoric acid, a solution of soda 1 per cent. strong, extracted 0.0089 per cent.

Especially interesting, in this connection, is the great difference between soil and subsoil as to the watery extract, and the farmer will observe, that by plowing such subsoil to the surface, he would give the plant less available nutriment, unless he added solvents, such as lime, etc.

After adding 80 bush. lime pro Prussian morgen ($\frac{1}{4}$ of an acre) to a deeply plowed field, whose subsoil was bad, *beets* could be cultivated with advantage.

Wicke examined the mud of the Nile, taken up in the neighborhood of Thebes, to ascertain the proportion of soluble to insoluble in dilute muriatic acid. This is an instructive example, illustrating this point in one of the most fertile deposits.

IN DILUTE MURIATIC ACID.

	Soluble.	Insoluble.	Aggregate.
Oxyde of iron	15.992	5.095	21.087
Clay	10.341	7.385	17.726
Lime	1.817	0.933	2.750
Magnesia	2.271	0.933	3.204
Potash	0.691	0.552	1.243
Soda	1.283	2.127	3.410
Phosphoric acid	1.070	.....	1.070
Silica	12.098	26.801	38.899
Chlorine .....	.....	0.744	0.744
Chemically bound water and organic substances. ....	.....	9.426	9.426
Of sulphuric acid only traces were found ... ..	.....	.....	99.559

The mud was dried at 120° R.

This examination is related to and followed by those made by Wolf of Hohenheim, for the purpose of ascertaining the products of disintegration of muscle limestone and colored sandstone, which are not only the most complete and interesting ones of the kind, but they clearly point out the way by which analysis, commencing with the rock, progressing through the products of disintegration to the soil, throws light upon this obscure subject; while these investigations at the same time give evidence of the deep interest felt in a scientific foundation of agriculture, and which has induced the bureau of agriculture of Wirtemberg in this way to ascertain the extent of natural resources.

The importance, placed in this high office on such examinations, seems to be evidenced, that a change is taking place in the views about the real sources of national wealth; that in future the material conditions of the prosperity of nations will be less neglected, than has been done heretofore, and that the time will be not far distant, when the geologic and pedologic institutions will be combined. Then we will have a scientific foundation for our knowledge of the soil and the saying of an old French author, "*En un mot, il faut faire, de la culture des terres la premiere affaire d'Etat,*" will become an accomplished fact. It is certain, that through such an extended systematic examination, many unexpected results will be made, by which the products of the soil will be increased.

As examples of such examinations by Wolf, we will give here the analysis of the subsoil of a muscle limestone soil, and of the surface of a colored sandy soil, together with the proportion of parts soluble in cold muriatic acid to the whole mass :

SUBSOIL OF MUSCLE LIMESTONE—MUSCHELKALK FORMATION.

	Soluble in all.	Soluble in muriatic acid.
Water evaporating at 125°.....	1.2820	.....
Loss from heating.....	1.4140	.....
Carbonate of lime.....	35.2000	35.2000
“ manganese.....	22.7670	22.7670
Oxide of lime.....	0.1587	.....
“ magnesia.....	0.3587	.....
“ iron.....	2.1490	1.951
Clay	7.7147	0.354
Phosphoric acid.....	0.4188	0.4187
Sulphuric acid.....	0.0330	0.0330
Silica	24.6950	0.0230
Potash	2.8204	0.0161
Soda	0.1241	.....
	<hr/> 99.10114	

SURFACE SOIL OF COLORED SANDSTONE.

	Soluble in all.	Soluble in cold mu- riatic acid.
Water and organic substances.....	10.9642	.....
Silica.....	73.0505	0.1393
Clay	9.1640	0.9012
Oxide of iron.....	2.5463	1.4267
Oxide and sub-oxide of manganese.....	0.2083	0.0883
Carbonate of lime.....	0.2300	0.3
Impure carbonate of lime.....	0.1158	.....
Magnesia	0.2167	0.0610
Acid sulphuricum.....	0.0304	0.0272
“ phosphoricum	0.0940	0.0654
Potash	2.7214	0.0701
Soda	0.3859	0.0031
	<hr/> 99.7275	

A comparison of these analyses shows how large a quantity of nutrient ingredients is insoluble, and how little is soluble, in cold muriatic acid; further, that phosphoric acid is far more soluble than potash.

The difference in the two soils, as to the quantity of phosphoric acid, is very great, since the subsoil of the muscle limestone contains four-times as much as the surface sandstone soil. Beside, in the one only two-thirds is soluble, while in the other it is altogether so. There is little difference in the quantity and solubility of the potash in both soils. While, therefore, the subsoil of muscle limestone is proven by the analysis to be far superior to the sandstone surface soil, in plant nutriment, this is still more the case when compared with the subsoil of sandstone. Wolf found that of the phosphoric acid, of which it contained in all 0.0498 per cent., only 0.0219 per cent. was dissolved in muriatic acid (which is less than half.) Of potash, of which it contained in all 0.26499 per cent., only 0.036 was dissolved.

This difference of the subsoil has great influence on the value of the soil for production, and this is so much more important as we have little power to influence and change it.

The large amount of carbonates in the muscle lime stone soil points to the fact, that in otherwise equal condition a larger amount of solvents will be formed out of the manure in a given time and that the development of plants will be correspondingly quicker.

The importance of this has been pointed out before since absorption and assimilation are more rapid in certain periods, then in others, when growth progresses slower or comes to a stand still. When we compare the solubility of the ingredients of these soils with that of the deposit of the Nile, the difference is very obvious. Muriatic acid dissolved of the of the latter three-fourths of all the oxide of iron, of clay more than one half, and of soda over one-third, of the phosphoric all, and of silica about one-third.

In Rhenish Prussia also attempts have been made, to get a knowledge of her primitive formations and original rock formations, through the analysis of the soil. The agricultural college at Poppelsdorf had specimens of the most important analyses at the exhibition at Paris with the remark, that the work was not yet finished, and that therefore the result could not be stated in full. Whoever has traveled much over the mountain regions of Germany and has paid attention to the formation of the soil according to the primitive rock formation, must certainly have found at the exhibition many familiar specimens. They show also, that again more attention is paid to the scientific examination of the soil. The beautiful specimens of agricultural products and of organic and mineral substances, which are contained in a given quantity of the same, might have been better illustrated by also adding the more important mineral ingredients of the soil for comparison, stating also the degree of solubility.

In Electoral Hesse, too, more attention is paid lately to a proper examination of the soil after the method proposed by Wolf, and at present analyses are made at the experimental farm Heidan of the different soils of that mountainous region.

In this way material is gradually collected for a more thorough knowledge of the soil but it must be a good while yet, before we can form a correct view of the true foundation of agriculture.

When we notice, of what influence the stony formation is on vegetable and even animal life, (in as much as animal life confined to one formation will not thrive so well in another) and how much the number and size of towns and villages, the number of inhabitants and the quantity and quality of live stock, differ in the several regions of country according to the formation of soil, we cannot help wishing to have more thorough scientific knowledge, and explanation of it. Agriculture, as well as forest culture, are equally interested in this investigation, and the possessors of large estates are as much prompted by self interest to promote them, as they would render a service to science. As regards the change in the ingredients of the soil in consequence of cultivation, it has been remarked before, that we can get useful data only by analyses before and after a long period of cultivation, and it would be desirable, that such examination should take place, in soil, that has been robbed "for centuries as in the countries round the Mediterranean or the tobacco plantations of Virginia, to bring us nearer to settle this controversy first started by Liebig." By chemical analysis alone will it be possible, to estimate in the course of time the importance of the so called robbing system of farming, and whether our cultivation of the soil is equal to the gradual extinction of our means of subsistence. Certain it is, that one cultivation of the soil withdraws in every year's harvest a large amount of mineral plant nutriment, not restored to it in the shape of manure. Estimating this loss on the whole arable soil of a soil of a state, it amounts to very considerable.

Of examinations with this object in view, those of Bemmeleux, of the Netherland marshes, and especially of the drained country round Dollart, before and after long-continued cultivation, deserve especial attention. This soil, being treated with nitro-muriatic acid, out of 100 parts, was dissolved.

MARSH SOIL.

	New.	After 40 years' cultivat'n	200 yrs cultva'n	After 200 to 300 years cultivation.
Lime	6.05	5.5	1.5	1.0
Magnesia	1.66	1.5	1.3	1.3 to 1.2
Potash	1.1	1.0	....	1.0 to 0.9
Soda	1.1	0.23	0.1	0.1
Clay	4.5 5.0	4.51	5.0	4.5 to 5.0
Oxide of iron	4.5	5.0	6.0	5.0 to 6.0
Carbonic acid	4.8	3.8	0.8	.0
Sulphuric acid	1.0	0.36	0.02	0.02
Chlorine	0.73	0.08	0.02	0.02
Phosphoric acid	0.26	0.20	....	0.02
Humus	12.0	6.10	....	6.10

Lime, with the exception of 1 per cent., is combined with carbonic acid, The magnesia is in the form of a silicate, the insoluble parts consists of 46.50 per cent. of clay, and 14.30 per cent of sand. These analyses show how rich this soil remains, even after being cultivated for centuries, without manure.

Finally, if we inquire into the composition of the rock from which originally or secondarily our surface soil has developed, we will find that soils originating from the same formation as to soil, nevertheless show great variety as to fertility.

The boniteur, (a person estimating the value of a farm,) who understands his business, pays, in mountainous regions, attention to the origin of the soil, and especially values the first washings of basalt and lime formations. The difference in the nutrient elements of the soil he can only estimate from the luxuriance of the vegetation, which depends, not only on the presence of a large amount of nutrient elements, but also on the presence of solvents and other physical conditions. According to Petzhold, there is a dark soil in Russia (Tschernosem) which is very sterile.

How great the difference of the composition of rock is, the following data will show: In the Dolerites of the Kaiserstuhl, we find 13.7 per cent. potash, and 6.9 per cent phosphoric acid, while in others we find only 1.5 per cent. potash, and of phosphoric acid only traces. In Phonolith the maximum of potash is 9.52 per cent., the minimum 0.12 per cent. The maximum of lime is 14.81 per cent., the minimum 0.12 per cent. In basalt the maximum of alkalies is 11.65 per cent. of lime, lime and magnesia 27.9 per cent., while the minimum of the latter is only 4.31, and of the former only traces. Analysis shows in granite a maximum of 14.47 per cent. alkalies, and a minimum of 0.42 per cent. Richard found in fifteen muscle lime stones from the neighborhood of Jena—

0.003 — 1.205 per cent. phosphoric acid.

0.002 — 0.087 per cent. potash.

0.021 — 0.158 per cent. nitrogen.

In the marly muscle limestone of Iessenhausen they found 2.77 — 2.93 per cent. carbonates, in another only 0.006 per cent. ; in a limestone of Tyrol, 0.6 per cent. carbonate of potash. While the analysis of a chalk formation in Denmark gave 0.04 per cent. phosphoric acid ; a muscle limestone in Swabia had 0.08 per cent., and a limestone from the Selur of England 0.46 per cent. On the other hand, in the fresh water lime of Cannstatt and in the the crystalized limestone of Carrara, there is not a trace of phosphoric acid. In some granite formations there is as much as $1\frac{1}{2}$ per cent., and in clay slate as much as $\frac{3}{4}$ per cent. phosphoric acid.

The binding material of sand and mixed stone is also of very different composition, and amongst the cemented parts we find quartz, feldspath and mica, and a number of other formations more or less disintegrated. This composition of the primary formations is by no means without influence on the quantity of nutrient ingredients in the soil and its fertility, and consequently the difference in the stony formations point to a great difference in the soil. A soil may be limey, humus, and, as to its physical condition, favorable for vegetation, yet must show great differences in its mineral ingredients in accordance with its origin from primary formation.

Finally, besides the mechanical and chemical analysis of the soil, it is important to notice its capacity for moisture and heat, the absorption of vapor and other important nutriment from the air. The relation of moisture and heat settles the point as to whether a soil is suitable for agriculture or not ; its capacity for absorption is important to decide whether it can be carried on profitably. Clayey soil is, in this respect, very different from sandy. While the farmer is under necessity to apply large quantities of solvents to the former, the absorption in the latter is so unimportant, that there is danger of large quantities of nutriment sinking to the subsoil, for which reason it is important to manure less heavy and more frequently. The means, however, by whose aid the relation of sandy soil to moisture is improved, also increases the absorption of nutriment from the air : it is *loam*, which is always found in sufficient quantity in the neighborhood of sandy soil.

We add to these hints some remarks of the well known English chemist, Voelker, who recently has paid much attention to the chemical examination of the soil. Voelker says : "Every soil which reddens blue litmus paper rapidly when moist, contains a noxious substance. Good and fertile soil is rather neutral or slightly alkali. The acid may be earths, humic or sulphuric, the latter—sometimes in connection with pyrites—

soil containing them is sterile. A soil containing 0.5 per cent. of sulphate of iron is sterile, and with 1 per cent. of it, vegetation is impossible."

A carefully conducted and properly interpreted analysis, gives, according to Voelker, information as to:

1. Whether a sterile soil is so from the presence of noxious substances (sulphate of iron) or from a surplus in soluble salts, (chloride of sodium, nitrate of potash, etc.)

2. Whether the soil, in consequence of a surplus of one or more of the mechanical ingredients, (clay, sand, lime, humus) has a faulty composition.

3. Whether there is a deficiency in lime, phosphoric acid, potash, or mineral nutrient ingredients in general.

4. Whether the soil can be improved by manuring with lime, marl and clay, and which of these ingredients would be the best.

5. Whether special kinds of manure may be used (super phosphates, ammonia, etc.) without injury, or whether stable manure is necessary.

6. What artificial manure, or manure of commerce would be the best.

7. Whether the plant nutriment in the soil is in a soluble or inert condition.

8. Whether subsoil or steam plowing would increase the fertility of the soil.

9. Whether a clay may be used with advantage for manure, and if so, raw or burnt.

Peters, who made a report on these propositions, makes the very pertinent remark: "A proper interpretation of the analysis is necessary, and that is not possible without thorough agricultural as well as chemical experience."

I believe I have, in my previous remarks, shown in how far these propositions of Voelker are correct, and that the farmer always has reasons to test his deductions by experiments. This is the only safe way.

Sometimes false deductions are made from chemical analyses, because one-sided conclusions are drawn, without reference to other conditions of fertility that are essential to success, and without which the most important nutrient ingredients are without effect. Failures from this cause have produced in some circles a want of interest, which is the enemy of all progress.

I hope to have proven that a thorough examination of the soil cannot take place without a chemical analysis, and that it must be looked upon as a necessity for the educated farmer, to enable him to arrange and organize his business properly, and utilize all material of the soil. We cannot always expect to revolutionize the farm management in consequence of a chemical analysis of the soil. In this respect, as in othe

instances, the farmer is apt to expect too much from science. He ought to be content, and it certainly would be a great satisfaction and favor to him, if science proves the correctness of his method and management. Science gives, without doubt, greater security to his aims and efforts, and this the more he learns to understand the relations of organisms and their development as influenced by natural laws, to those extra-organic conditions that pre-suppose them.

I must here call attention to the beautiful words of Alexander von Humboldt, with which this savant, who studied all phenomena of nature with equal interest, attempted to prove the importance of the natural sciences to agriculture—the noblest and most important occupation of mankind—at a time (1798) when the first attempts were made to apply the discoveries of antiphlogistic chemistry to manufacture, (in the introduction to his work, “Ingenhousz on nutrition of plants and fertility of the soil:”) “The more we penetrate the mystery of organic forces, the more we understand the great process of life by which all vital phenomena of animal and vegetable life are brought about, the sooner we may hope to find means to advance the more rapid development of their organs and the improvement of their ingredients. Even if the result of such an examination should be, the cultivation of the soil would continue after the same method that seems to be well founded on an experience of thousands of years; should even future naturalists advise admixture in the same manner as now, and the same mode of manuring, yet, even then, this application of chemistry to agriculture would not have been as valueless as some purely practical men would fain make us believe. It is with agriculture as it is with practical medicine, with the cultivation of the vegetable as with that of the animal body. We speak of ‘our present method,’ ‘our present manner,’ as all farmers and physicians had long been in harmony about generally acknowledged principles. Without knowing the experiments of naturalists, and without being confounded by their theories, have farmers disputed about the preparation of the soil, about fallowing to give it new strength, and about the treatment of young plants. Even if our advancement in the natural sciences, therefore, should not lead to entirely new remedies in medicine, nor to a form of manure differing from our present one, yet it would be beneficent for mankind if they teach us to select, from the many antagonistic methods, the *best*, to explain many every-day yet unexplained phenomena, and throw light upon a casual connection between effects from whose action frequently results the well being of the most numerous and most important class of mankind.”

It would be well if those farmers who look with a certain partisan contempt upon science and her results, would learn to respect her sufficiently,

at least, to acknowledge that she is capable of accomplishing *much*, though not *everything*. Frequently the claims which the farmer makes on science presuppose the possibility of changing natural laws, forgetting that the great object of agriculture is not to change but to make natural laws subservient to her object.

The success of the farmer depends on how he is capable, anywhere where inheritance or choice has settled him, to accommodate himself to soil, climate, means of communication, capital, implements and other conditions, and to arrange accordingly the rotation of crops and the chemical mechanical treatment of the soil. *The natural laws must always remain the same !*

MADISON COUNTY CATTLE AND HORSE SALES,

From July, 1871, to July, 1872—184th to 196th Sale, inclusive. Reported from Official Records.

BY IRVING F. WILLIS, LONDON, OHIO.

One Hundred and Eighty-Fifth Sale—Tuesday, July 5th, 1871.

CATTLE—THREE YEARS OLD.		
No.	Weight.	Price.
16 Greene.....	1350.....	\$75 50
18 Cincinnati.....	1325.....	62 25
18 Greene.....	1250.....	64 00
11 Champaign.....	1125.....	42 00
17 Cincinnati.....	1160.....	58 00
23 Greene.....	1125.....	56 50
8.....	1300.....	61 50
2 Greene.....	1100.....	60 00
112 head, aver'g..	1227.....	\$60 50

CATTLE—TWO YEARS OLD.		
2 Hardin.....	900.....	\$37 50
12 Allen.....	750.....	27 30
2.....	900.....	36 50
10 Greene.....	950.....	41 25
12 Allen.....	750.....	26 65
14.....	1000.....	52 60
2 Champaign.....	850.....	30 05
54 head, aver'g..	866.....	\$37 12

CATTLE—ONE YEAR OLD.		
14.....	650.....	\$30 50
26 Allen.....	600.....	22 00
7 Greene.....	650.....	40 00
3.....	350.....	15 00
50 head, aver'g..	608.....	\$26 48

216 head of three, two and one year olds, averaging round, 993 lbs., \$46.92, and weighing a total of 214,570 lbs., bringing, cash—\$10,104.

OXEN—YOKES.		
1 pr.....	4300.....	\$219 50

MILCH COWS AND CALVES.		
1.....	900.....	\$39 25

32A

DRY AND FAT COWS.		
No.	Weight.	Price.
1 Allen.....	950.....	\$30 00
2.....	1175.....	50 00
1.....	1000.....	25 00
1 Greene.....	1100.....	60 00
2 Allen.....	800.....	28 90
2.....	750.....	20 25
1 Greene.....	1050.....	39 00
10 head, aver'g..	955.....	\$35 23

HEIFERS—THREE YEARS OLD.		
1.....	1375.....	\$66 25

HEIFERS—ONE YEAR OLD.		
1 Allen.....	800.....	\$28 90
1.....	750.....	20 25
2 head, aver'g..	775.....	\$24 58

BULLS.		
1 2 yrs.....	1000.....	\$35 00
1 2 ".....	600.....	38 25
1 1 ".....	800.....	70 00
3 head, aver'g..	800.....	\$64 42

Total number of cattle reported.	235 head.
" amt of cash sales of cattle,	\$11,023 70
" " weight	234,645 lbs.
Average weight, all round.....	999 "
" price, ".....	\$46 63

HORSES.		
1 Columbus.....		\$154 00
4 Pennsylvania.....	aver'g	175 00
5 Cincinnati.....	"	100 00
7 Harrisburgh, Pa.....	"	115 00
8 ".....	"	115 00
25 head, aver'g.....		\$123 16

Total number of stock reported.	260 head.
Total amount of cash sales.....	\$14,102 70

REMARKS.

The regular day coming on the "glorious 4th," caused a postponement of one day. The people had "jollified" so largely, that a rather smallish crowd for this month was in attendance. The offerings of cattle were sold out clean, at about the figures ruling heretofore, for a month or two.

One Hundred and Eighty-Six Sale—Tuesday, August 1st, 1871.

CATTLE—THREE YEARS OLD.			MILCH COWS AND CALVES.		
No.	Weight.	Price.	No.	Weight.	Price.
25 Cincinnati	1100	\$45 00	1	900	\$25 00
16	1300	65 00	1	800	31 30
18	1400	69 00	1	1300	50 00
19 Cincinnati	1200	51 00	—	—	—
8	1050	40 00	3 head, aver'g	1000	\$35 43
22 Greene	1200	49 75	—	—	—
19 Cincinnati	1275	53 80	—	—	—
127 head, aver'g	1206	\$52 22	DRY AND FAT COWS.		
CATTLE—TWO YEARS OLD.			1	1000	\$33 35
15	700	\$28 00	2	900	26 00
16	825	32 00	3 head, aver'g	933	\$28 45
21 Cincinnati	955	39 75	Total number of cattle reported.		
11	900	30 00	" am't of cash sales—cattle.		
63 head, aver'g	952	\$33 28	" weight of all cattle.		
CATTLE—ONE YEAR OLD.			Average weight, all round.		
26 Allen	640	\$22 05	" price, " "		
15	575	22 60	HORSES.		
13	600	24 10	5 head, Delaware, O.	aver'g	\$180 00
70 Champaign	550	20 00	5 " Cincinnati	"	90 00
2	650	20 00	3 " Dayton	"	140 00
126 head, aver'g	578	\$21 15	8 " London, O.	"	125 00
316 head of three, two and one year olds,					
averaging round, 885 lbs., \$36.06, weighing					
a total of 279,645 lbs., and bringing,					
cash—\$11,394.05.					
OXEN—YOKES.			8 " Harrisburgh, Pa.	"	125 00
1 pr.	3200	\$135 00	7 " " "	"	115 00
1 " Cincinnati	2000	116 00	2 " Dayton, O.	"	140 00
2 pr., aver'g	2600	\$125 50	3 " Home	"	80 00
			41 head, aver'g		\$126 71
			Total number of stock reported..		
			Total amount of cash sales.....		

REMARKS.

A very large attendance of people, with many new faces from abroad.

The cattle dragged somewhat, from last month's quotations, and were perhaps a shade lower in price. Some unsold.

One Hundred and Eighty-Seven Sale—Tuesday, September 5th, 1871.

CATTLE—THREE YEARS OLD.			CATTLE—TWO YEARS OLD.		
No.	Weight.	Price.	No.	Weight.	Price.
25 Cincinnati	1100	\$46 30	7 Champaign	950	\$40 00
18	1000	40 50	34 Texans	665	24 00
43 head, aver'g	1012	\$43 87	25 Greene	1100	47 50
			18 Clarke	825	30 05

No.	Weight.	Price.	No.	Weight.	Price.
20 Cincinnati.....	1000.....	\$37 05	1	1300.....	\$54 00
12 "	750.....	30 05	3 head, aver'g... 933.....		\$38 00
117 head, aver'g... 866.....		\$33 81	HEIFERS—ONE YEAR OLD.		
CATTLE—ONE YEAR OLD.			6 Cincinnati.....	725.....	\$26 35
21 Allen	660.....	\$24 00	Total number of cattle reported.....	221 head.	
15	675.....	20 00	" amount cash sales—cattle.....	\$7,231 60	
12 Clarke	500.....	15 50	" weight of all cattle.....	185,045 lbs.	
48 head, aver'g... 609.....		\$21 00	Average weight, all round.....	801 "	
208 head of three, two and one year olds,			" price,	\$31 31	
averaging round, 800 lbs., \$31.34, weigh-			HORSES.		
ing a total of 174,094 lbs., and bringing			1 2 yr. colt.....		\$57 50
\$6,832.55.			6 Harrisburgh, Pa.....	aver'g	95 00
MILCH COWS AND CALVES.			17 Cincinnati	"	100 00
1 Allen	900.....	\$36 00	10 Harrisburgh, Pa.....	"	110 00
1	1000.....	25 75	10 Cincinnati	"	85 00
1 Greene	850.....	25 00	2 Dayton	"	200 00
1	1100.....	40 40	2 Madison Co.....	"	200 00
4 head, aver'g... 950.....		\$31 79	6 N. Y. City.....	"	180 00
DRY AND FAT COWS.			6 Harrisburgh, Pa.....	"	110 00
1	700.....	\$19 75	60 head, aver'g		\$123 62
1	800.....	40 25	Total number of stock sold.....	281 head.	
			Total amount of cash sales	\$14,649 30	

REMARKS.

The attendance of people was large, though the stock, in numbers, was rather limited. Sales generally a drag, several lots being withdrawn. Prices were reckoned fully half a cent per pound under the August sales.

The trade in horses of good quality, mainly for Eastern shipment, was larger than we ever remember to have known it in a fall month, and, as will be seen from our report, good prices were paid.

One Hundred and Eighty-Eighth Sale—Tuesday, October 3d, 1871.

CATTLE—THREE YEARS OLD.			CATTLE—ONE YEAR OLD.		
No.	Weight.	Price.	No.	Weight.	Price.
50 Highland.....	1150.....	\$50 00	17 Allen.....	750.....	\$26 00
50 Greene	1300.....	60 00	29 Greene	780.....	35 00
40 Cincinnati.....	1100.....	43 00	7	550.....	25 00
44 "	1050.....	42 00	8 Greene	700.....	23 00
40 "	1100.....	46 65	14	600.....	24 00
36 "	1250.....	55 00	8 Cincinnati.....	750.....	31 00
16 "	1400.....	49 50	10 "	800.....	27 50
246 head, aver'g .. 1159.....		48 39	93 head, aver'g... 723.....		28 76
CATTLE—TWO YEARS OLD.			529 head of three, two, and one year olds		
31 Franklin	1000.....	\$41 25	averaging round, 1,016 pounds, \$42.30, and		
7	1050.....	42 50	weighing a total of 537,480 pounds, bring-		
13 Clarke	850.....	36 60	ing, cash, \$22,375.65.		
35 Greene	1150.....	51 70	OXEN—YOKES.		
9 Clarke	900.....	40 50	1 pair	3400.....	\$170 00
24 Greene	1025.....	43 15	1 " Cincin'ti	3800.....	200 00
4 Clarke	1000.....	41 00	1 " "	2800.....	113 00
6	1050.....	37 00	3 pair, aver'g... 3334.....		161 00
27 Cincinnati.....	875.....	35 05	MILCH COWS AND CALVES.		
15 Shelby	800.....	29 25	1 Cincinnati	1100.....	\$55 00
19 Cincinnati.....	900.....	40 10			
190 head, aver'g .. 975.....		41 02			

No.	Weight.	Price.
1 Clarke	800	25 50
1	1000	34 30
1	900	20 25
4 head, aver'g	950	33 76

DRY AND FAT COWS.

1	1200	\$50 00
1	1000	41 75
1	900	24 00
3 head, aver'g	1033	38 58

HEIFERS—ONE YEAR OLDS.

13 Cincinnati	650	\$25 65
6 Franklin	560	17 60
19 head, aver'g	622	22 32

No.	Weight.	Price.
10 Cincinnati	250	\$11 00

Total number of cattle reported, 571 head.
 " amount of cash sales—cattle, \$23,662 50
 " amount of weight—cattle, 568,690 lbs.
 Average weight, all round 996
 " price, " \$41 44

HORSES.

11 head, Cincinnati,	aver'g	\$30 00
5	"	80 00
2 head, Madison,	"	200 00
2 head, Columbus,	"	130 00
6 head, Harrisburgh, Pa.,	"	115 00
26 head, aver'g		101 00

Total number of stock reported, 597 head
 Total amount of cash sales \$26,292 50

REMARKS.

The sales were lively, and prices somewhat in advance of the previous month. Stock all sold, and a demand for more of good quality of wintering and feeding qualities not supplied. The great surplus of feed of all kinds, present and prospective, insures full prices for the coming months, and a brisk demand.

One Hundred and Eighty-Ninth Sale—Tuesday, November 7th, 1871.

CATTLE—THREE YEARS OLD.		
No.	Weight.	Price.
32 Cincinnati	1300	\$55 00
7 Clarke	900	26 00
27 " "	1300	60 00
7	1200	46 65
20 Vinton	1100	44 75
32 Clinton	1000	36 00
8	1300	58 25
8 Vinton	1200	44 75
51 Cincinnati	1300	50 00
5	1400	40 00
197 head, aver'g	1207	\$48 47

CATTLE—TWO YEARS OLD.

32 Clinton	1100	\$44 95
11 Clarke	1300	62 50
13 " "	1100	48 15
11	1050	40 10
14	1100	42 60
14 Franklin	950	36 00
23 Clarke	900	31 25
27 Cincinnati	1100	47 00
7 Clarke	1212	42 00
24 Greene	1050	42 30
30 Cincinnati	1000	35 25
13 Greene	1150	45 00
219 head, aver'g	1014	\$42 05

CATTLE—ONE YEAR OLD.

17 Champaign	700	\$25 25
27 Allen	700	22 80
27 Clarke	600	25 00
6 Greene	650	23 50
30 Pickaway	600	26 00
1	600	15 00

No.	Weight.	Price.
7	950	32 25
5 Clarke	800	45 30
1	400	10 50
3 Allen	450	12 35
5	750	26 75
22 Greene	750	25 25
32 Cincinnati	650	23 00
1	900	20 00
184 head, aver'g	673	\$24 43

600 head of three, two and one year olds, averaging round, 973 lbs., \$38.76, and weighing a total of 583,634 lbs., bringing in cash, \$23,255.25.

OXEN—YOKES.

1 pr., Allen	2700	\$138 00
1 " "	3000	123 00
1 " "	3000	140 50
1 " Logan	2630	126 30
1 " "	2600	126 00
1 " Allen	2250	104 00
1 " Clarke	3600	155 00
1 " Cincinnati	2800	80 00
8 pr., aver'g	2822	\$121 00

MILCH COWS AND CALVES.

1	900	\$41 25
1	800	29 00
1	800	36 75
1	900	37 00
2	600	19 50
1	700	15 50
7 head, aver'g	757	\$28 50

DRY AND FAT COWS.			Average weight, all round.....		930 lbs.
No.	Weight.	Price	"	price	"
2 Clarke	850.....	\$25 25			\$39 06
1	800.....	20 00			
1	750.....	30 00			
1	700.....	15 60			
5 head, aver'g ..	790.....	\$23 32			
BULLS.			HORSES.		
1 Union, thor'bred	900.....	\$30 00	4 Xenia.....	aver'g	\$115 00
			9 Cincinnati	"	80 00
			6 Harrisburg, Pa.	"	95 00
			4 " "	"	110 00
			9 Richmond, Va.	"	80 00
			32 head, aver'g		\$91 00
Total number of cattle reported 629 head			Total number of stock reported 661 head		
" am't of cash sales—cattle \$24,568 85			Total amount of cash sales..... \$26,478 85		
" weight of all cattle .....616,364 lbs.					

REMARKS.

The attendance—both of people and stock—was larger than for a year past. Not less than 1,200 were in and about the market, more than 800 head of which our report shows sale of. Prices were considered slightly below those of October, but were fair.

One Hundred and Ninetieth Sale—Tuesday, December 5th, 1871.

CATTLE—THREE YEARS OLD.			447 head of three, two and one year olds,		averaging round, 950 lbs., \$41.94, weighing a total of 424,850 lbs., and bringing in cash, \$18,747.36.
No.	Weight.	Price.			
11 Vinton	950.....	\$28 50			
18 Cincinnati	1100.....	48 00			
16 Western.....	1000.....	49 60			
13	900.....	36 50			
45 Cincinnati.....	1250.....	57 35			
23 Clinton	1100.....	50 00			
126 head, aver'g..	1107.....	\$49 02			
CATTLE—TWO YEARS OLD.					
32	1000.....	\$54 50			
32	1200.....	60 00			
30 Cincinnati	1000.....	48 50			
2	900.....	45 00			
22 Clinton	1000.....	45 00			
20 Cincinnati	900.....	38 30			
19 "	850.....	35 25			
16 "	1000.....	35 10			
173 head, aver'g..	1008.....	\$47 32			
CATTLE—ONE YEAR OLD.					
25 Champaign.....	800.....	\$35 60			
22 Cincinnati	800.....	27 15			
19 Western.....	800.....	36 25			
2	700.....	32 50			
15	600.....	25 00			
12	900.....	29 00			
14	800.....	34 20			
18 Western.....	600.....	23 10			
12	650.....	21 00			
9 Cincinnati.....	800.....	29 25			
148 head, aver'g..	751.....	\$29 55			
			OXEN—YOKES.		
No.	Weight.	Price.	No.	Weight.	Price.
1 pr.	3300.....	\$140 00	1 "	2600.....	116 00
1 "	3500.....	200 00	1 "	2000.....	132 50
1 "	3000.....	160 00	1 "	3800.....	190 00
6 prs., aver'g....	3033.....	\$156 42			
			DRY AND FAT COWS.		
			1	1000.....	\$40 00
			HEIFERS—ONE YEAR OLD.		
			1	700.....	\$26 00
			CALVES.		
			21 Cincinnati.....	350.....	\$10 35
			HORSES.		
			7 head, Cincinnati.....	aver'g	\$75 00
			4 " Georgia	"	65 00
			11 head, aver'g.....		\$71 36
			Total number of stock reported. 493 head.		
			" amount of cash sales..... \$20,752 11		

REMARKS.

The closing sale of 1871 was ushered in with a thermometer at —0, at daylight, yet by nine o'clock a large number of the usual attendants, and some new ones, were seen on the market, ready for business.

The extreme cold prevented a large attendance, however, yet every hoof was sold, and at a nice advance over November prices.

The quantity of feed of all kinds in our county, and Central Ohio's contiguous counties, is immense, and stock of all kinds is wanted to consume it.

The horse trade will open with the coming month's sales, and a good business is prophesied by Eastern shippers.

RECAPITULATION.—*Last six months of 1871, showing the number sold (as per report) of each age and kind, and the total number of cattle, all ages, with the total number of stock of all kinds.*

Last Six Months of 1871.	CATTLE.											Horses.	Total of all stock.	
	Three years.	Two years.	One year.	Total of 3, 2 and 1 year.	Calves.	Oxen—yokes.	Milch cows and calves.	Dry and fat cows.	Heifers, 2 yrs. old.	Heifers, 1 year old.	Bulls.			Total of all cattle.
July	112	54	50	216	....	....	1	10	1	2	3	235	25	260
August	127	63	126	316	....	2	3	3	....	....	....	326	41	367
September	43	117	48	208	....	....	4	3	....	6	....	231	60	281
October	246	190	93	529	10	3	4	3	....	19	....	571	26	597
November	197	219	184	600	....	3	7	5	....	....	1	629	32	661
December	126	173	148	447	21	6	....	1	....	1	....	482	11	493
Totals	851	816	649	2316	31	19	19	25	1	28	4	2464	195	2659

Table of total weights, cash sales, and cents per pound, monthly, with average of each, of 3, 2 and 1 year old cattle; also, total pounds, sales, average price, and cents per pound, of ALL neat stock, monthly; with totals and averages of all kinds and ages, together, for the last six months of 1871.

Last Six Months of 1871.	Three, two and one year old—total pounds.	Three, two and one year old—total sales.	Three, two and one year old—cents per pound.	All cattle—total pounds.	All cattle—total sales.	All cattle—average price.	All cattle—cents per pound.
July	214,570	\$10,104 00	4.70	234,645	\$11,023 70	\$46 63	4.70
August	279,645	11,394 05	4.07	290,645	11,836 70	36 31	4.07
September	174,094	6,832 55	3.92	185,045	7,231 80	31 31	3.90
October	537,480	22,375 65	4.16	568,690	23,662 50	41 44	4.16
November	583,634	23,255 25	3.98	616,364	24,568 85	39 06	3.98
December	424,850	18,747 36	4.41	452,100	19,967 11	41 43	4.41
Totals	2,214,273	\$92,708 86	.....	2,347,489	\$98,290 66	.....	.....
Averages	369,046	\$15,451 48	4.21	391,248	\$16,381 78	\$39 36	4.20

MADISON COUNTY CATTLE SALES.

Table showing the average prices of the different ages of cattle (with average weight), and the average price per head, of all ages, separately; also, average of 3, 2 and 1 year old cattle, together, for each month of the last half of 1871, and total average for the time of all kinds; with the addition of all other stock, reported monthly, and total for the last six months of 1871; also amount of cash sales monthly, and total.

Last Six Months of 1871.	CATTLE.												
	Three years—lbs.	Three years—price.	Two years—lbs.	Two years—price.	One year—lbs.	One year—price.	Three, two and one year—lbs.	Three, two and one year—price.	Calves—lbs.	Calves—price.	Oxen, yokes—lbs.	Oxen, yokes—price.	Milch cows and calves—lbs.
July.....	1227	\$60 50	866	\$37 12	608	\$26 48	993	\$46 92	.....	.....	4300	\$219 50	900
August.....	1206	52 22	952	33 28	578	21 15	885	36 06	.....	.....	2600	125 50	1000
September.....	1012	43 87	866	33 81	609	21 00	800	31 34	.....	.....	.....	.....	950
October.....	1159	48 39	975	41 02	723	28 76	1016	42 30	250	\$11 00	3334	161 00	950
November.....	1207	48 47	1014	42 05	673	24 43	973	38 76	.....	.....	2822	121 00	757
December.....	1107	49 02	1008	47 32	751	29 55	950	41 94	350	10 25	3033	156 42	.....
Average for 6 months.	1153	\$50 58	947	\$39 10	655	\$25 23	936	\$39 55	300	\$10 63	3218	\$176 68	911

TABLE—Continued.

Last Six Months of 1871.	CATTLE.								Horse—average price.	Amount of sales.	
	Milch cows and calves—price.	Dry and fat cows —lbs.	Dry and fat cows —price.	Heifers, 3 years— lbs.	Heifers, 3 years— price.	Heifers, 1 year— lbs.	Heifers, 1 year— price.	Bulls—lbs.			Bulls—price.
July.....	\$39 25	955	\$35 23	1375	\$66 25	775	\$24 58	800	\$64 42	\$123 16	\$14,102 70
August.....	35 43	933	28 45	.....	.....	.....	.....	.....	.....	126 71	17,031 70
September.....	31 79	933	38 00	.....	.....	725	26 35	.....	.....	123 62	14,649 30
October.....	33 76	1033	38 58	.....	.....	622	23 32	.....	.....	101 40	26,292 50
November.....	28 54	790	23 32	.....	.....	.....	.....	900	30 00	91 00	27,478 85
December.....	.....	1000	40 00	.....	.....	700	26 00	.....	.....	71 36	20,752 11
Average for 6 months.	\$33 75	941	\$33 93	1375	\$66 25	706	\$25 06	850	\$47 21	\$106 14	\$20,034 53

Total sales for six months..... \$120,207 16

One Hundred and Ninety-First Sale, Tuesday, January 2d, 1872.

CATTLE—THREE YEARS OLD.			
No.	Weight.	Price.	
11 Kentucky	1100	\$49 90	
34 Cincinnati	1175	56 00	
46 St. Louis	1300	62 00	
34 Cincinnati	1025	45 70	
7 Greene	1200	50 50	
49 Chicago	1150	52 00	
181 head, aver'g.	1168	\$53 93	

CATTLE—TWO YEARS OLD.			
12 Champaign	950	\$44 05	
34 Cincinnati	1070	51 25	
25 " "	950	38 67	
20 " "	950	40 25	
25 " "	850	38 00	
15 " "	1050	52 00	
16 Western	700	29 25	
9 " "	800	41 00	
27 Clinton	1100	50 00	
35 Cincinnati	1050	53 00	
12 " "	1000	40 00	
8 " "	1000	35 00	
238 head, aver'g.	934	\$45 09	

CATTLE—ONE YEAR OLD.			
7 Western	400	\$19 25	
11 Clinton	1050 (choice)	50 40	
11 Cincinnati	600	22 50	
4 " "	625	27 25	
2 " "	700	37 00	
5 Allen	675	23 00	
18 Champaign	650	30 00	
20 " "	625	20 25	
16 " "	650	27 50	
8 Clinton	650	30 00	
25 Greene	700	36 00	
16 Vinton	650	28 50	
143 head, aver'g.	671	\$29 69	

568 head of three, two and one year olds averaging round, 943 lbs., \$44.02, weighing a total of 529,755 lbs., and bringing \$24,736.70.

OXEN—YOKES.			
No.	Weight.	Price.	
1 pr, Cincinnati	3600	\$187 50	
1 " "	2600	140 25	
1 " Cincinnati	2200	120 00	
1 " " "	3000	140 00	
1 " Western	2500	143 00	
1 " 1 yr. old	750	68 30	
6 prs, aver'g.	2442	\$133 17	

MILCH COWS AND CALVES.			
1 " "	900	\$33 00	
1 " "	1000	50 00	
1 " "	900	31 50	
1 " "	900	36 75	
4 head, aver'g.	875	\$37 81	

Total number of cattle reported. 578 head.
 " amount cash sales—cattle. \$25,687 00
 " weight of all cattle. 548,105 lbs.
 Average weight, all round. 959 "
 " price, " \$44 91

HORSES.			
30 Madison Co.	aver'g	\$140 00	
6 Georgia	"	60 00	
8 Harrisburgh, Pa.	"	110 00	
2 Boston, Mass.	"	125 00	
2 Columbus, O.	"	100 00	
8 Cincinnati	"	80 00	
56 head, aver g		\$116 60	

Total number of stock reported.. 634 head.
 " amount of cash sales..... \$32,217

REMARKS.

The day was a bad one to be out of doors—but few people in town early Being soon after the holidays, it was thought would insure a light attendance of stock and visitors. The report shows a large afternoon's transaction, with crowds of people and 600 to 700 head of neat-stock, mostly sold at prices fully up to those current in December.

The horse market was fairly stocked, and prices up to the usual standard of prices for this season of the year.

One Hundred and Ninety-Second Sale—Tuesday, February 6th, 1872.

CATTLE—THREE YEARS OLD.			
No.	Weight.	Price.	
27 Cincinnati	1000	\$51 00	
25 " "	1050	50 75	
11 " "	1150	52 00	
17 Clinton	1150	60 05	
228 head, aver'g.	1155	\$55 01	

CATTLE—TWO YEARS OLD.			No.	Weight.	Price.
No.	Weight.	Price.	MILCH COWS AND CALVES.		
29 Clinton	900	\$40 25	1	800	\$26 00
17	700	28 35			
41 Greene	800	35 25			
19	1000	50 00			
19	800	35 00	5	800	\$23 00
9	900	37 50	1	900	37 75
20 Cincinnati	850	37 75			
33	900	43 00	6 head, aver'g	816	\$25 46
18	750	25 00			
20 Shelby	800	26 85			
25 Allen	800	32 50			
40 Cincinnati	1030	51 00			
290 head, aver'g	860	\$38 30			
CATTLE—ONE YEAR OLD.					
39 Greene	650	\$35 25			
25	625	27 35			
13	550	18 00			
12 Clarke	750	45 30			
6	700	33 50			
40	650	31 25			
2 Cincinnati	500	29 00			
4	875	44 50			
17	800	38 75			
20 Cincinnati	775	36 65			
30 Clinton	650	27 00			
11 Clarke	700	30 25			
24	800	33 90			
253 head, aver'g	661	\$31 09			
771 head of three, two and one year olds, averaging round, 797 lbs., \$40.86, weighing a total of 613,975 lbs., and bringing, cash—\$31,504.00.					
(One of the largest sales, and best averages of both weights and prices, ever held.)					
OXEN—YOKES.					
1 pr.	2700	\$120 00			
1 "	3200	164 00			
1 "	3600	180 00			
1 " Union	3000	162 50			
1 "	2400	157 50			
1 " Cincin'ti	2600	115 00			
1 "	2800	110 00			
1 "	3400	130 00			
8 prs., aver'g	2963	\$142 38			
			HORSES.		
			19 Reading, Pa.	aver'g	\$130 00
			10 Piqua, O.	"	100 00
			7 Cincinnati	"	70 00
			6 Xenia	"	120 00
			5 Piqua	"	100 00
			5 Harrisburgh, Pa.	"	110 00
			6 "	"	115 00
			15 Philadelphia, "	"	120 00
			50 Various parties	"	120 00
			123 head, aver'g		\$115 61
			Total number of stock reported. 944 head.		
			" amount of cash sales. \$47,477 00		

REMARKS.

The inauguration day of the 17th year of this sales enterprise was a large one, in truth. The attendance of people was very large, and cattle and horses ditto. Not less than *one thousand head* of cattle, and from one hundred and twenty-five to one hundred and fifty head of horses were sold. Prices were very fair, cattle bringing a better average price than for months before, as will be seen from our report. The total returns are very large, closely approximating the best ever held.

One Hundred and Ninety-Third Sale—Tuesday, March 5th, 1872.

CATTLE—THREE YEARS OLD.			No.	Weight.	Price.
No.	Weight.	Price.	1	pr, Cin'nati	100 00
33	Cincinnati.....1050.....	\$49 90	1	" "	99 00
70	".....1100.....	62 30			
54	".....1150.....	59 60	6	prs, aver'g	\$128 58
18	Indiana.....1100.....	56 80			
17	".....1200.....	67 05			
33	Greene.....1025.....	52 50			
50	Kentucky.....1200.....	63 00			
21	".....1050.....	58 00			
296	head, aver'g.....1111.....	\$59 08			
CATTLE—TWO YEARS OLD.			MILCH COWS AND CALVES.		
16	".....1000.....	\$47 00	1	.....900.....	\$40 00
18	Cincinnati.....900.....	42 00	1	.....650.....	22 75
4	".....900.....	37 00	1	.....900.....	35 50
15	".....1000.....	53 60			
4	Allen.....700.....	26 25	3	head, aver'g	\$37 65
31	Cincinnati.....950.....	50 00			
2	Allen.....800.....	27 00			
18	".....650.....	25 06			
24	".....1000.....	52 00			
15	Union.....1067.....	54 80			
147	head, aver'g.....928.....	\$46 52			
CATTLE—ONE YEAR OLD.			DRY AND FAT COWS.		
6	".....600.....	\$17 00	1	.....800.....	\$32 00
24	".....850.....	42 50	2	.....1000.....	45 75
22	Highland.....400.....	20 00			
12	".....775.....	38 12	3	head, aver'g	\$41 16
27	".....750.....	35 00			
18	Franklin.....750.....	36 00			
13	".....700.....	26 25			
20	Greene.....850.....	44 30			
19	Franklin.....750.....	25 00			
9	".....800.....	31 25			
9	Greene.....700.....	34 10			
15	Clarke.....750.....	33 80			
6	".....750.....	35 80			
9	Cincinnati.....750.....	35 00			
230	head, aver'g.....666.....	28 32			
673 head of three, two and one year olds, averaging round, 918 lbs., \$45.39, weighing a total of 617,380 lbs., and bringing, in cash, \$30,521 49. A fine average, good weights, and large cash totals.			HEIFERS—ONE YEAR OLD.		
			2	.....600.....	\$20 00
			3	.....900.....	34 00
			5	head, aver'g	\$28 40
			CALVES.		
			21	Highland.....300.....	\$15 00
			1	.....500.....	25 00
			12	Greene.....400.....	15 55
			25	.....400.....	21 00
			59	head, aver'g	\$17 82
			BULLS.		
			1	Allen.....1000.....	\$26 00
			Total number of cattle reported. 756 head.		
			" am't of cash sales—cattle. \$32,754 24		
			" weight of all cattle.....662,530 lbs		
			Average weight, all round.....877 "		
			" price, ".....\$43 33		
			HORSES.		
			16	Madison Co.....aver'g	\$130 00
			14	Harrisburg, Pa.	120 00
			6	".....	115 00
			3	Pittsburg, ".....	135 00
			3	Pennsylvania.....	166 00
			14	Cincinnati.....	80 00
			4	Piqua.....	85 00
			4	Cincinnati.....	65 00
			1	.....	175 00
			65	head, aver'g	\$111 20
			Total number of stock reported.. 821 head.		
			" amount of cash sales.....\$40,002 20		
OXEN—YOKES.					
1	pr., Cincinnati 3600.....	\$240 00			
1	".....1600.....	83 00			
1	" Fayette.....1200.....	70 50			
1	".....2600.....	179 00			

REMARKS.

The day was fine, and the number of stock in market immense—three-year olds being the principal offerings. Prices for all classes were thought to be a shade lower than in February; but the prices indicate that all were cleared up at, we presume, satisfactory rates.

This was the opening day of the *seventeenth* year of these sales, and was a right royal inauguration, in truth.

One Hundred and Ninety-Fourth Sale—Tuesday, April 2d, 1872.

CATTLE—THREE YEARS OLD.			No.	Weight.	Price.	
No.	Weight.	Price.	1 (Calves)	1400	62 35	
13 Cincinnati	1000	\$50 43	1	3000	175 00	
33	1000	55 00	1	2000	\$130 00	
15 Clarke	1200	60 00	—	6 pair, aver'g	2250	\$127 92
13 Cincinnati	1050	54 00	—	MILCH COWS AND CALVES.		
49 Pickaway	1200	67 00	1	1050	\$49 00	
123 head, aver'g	1128	\$59 06	1	900	47 00	
CATTLE—TWO YEARS OLD.			1	950	43 50	
10 Clarke	800	\$40 20	1	1000	52 50	
9	975	39 25	—	4 head, aver'g	975	\$48 00
25	950	42 25	HEIFERS—TWO YEARS OLD.			
12	750	33 75	3 Allen	850	\$30 00	
24 Union	1025	56 25	4 Allen	800	28 00	
10	900	47 85	—	7 head, aver'g	821	\$28 86
25 Athens	800	29 50	HEIFERS—ONE YEAR OLD.			
14 Clarke	825	40 00	7 Clinton	550	\$32 30	
4 Clinton	800	35 50	13	750	30 00	
5	900	44 00	—	20 head, aver'g	680	\$27 65
4 Cincinnati	600	20 00	CALVES.			
8 Allen	600	26 00	11	500	\$24 30	
4 Allen	600	22 40	11 Clinton	300	15 10	
5 Allen	500	18 50	—	22 head, aver'g	400	\$19 70
9 Cincinnati	800	37 75	Total number of cattle reported 599 head.			
168 head, aver'g	843	\$39 48	" amount cash sales—cattle \$22,486.30			
CATTLE—ONE YEAR OLD.			" weight—cattle 47,627 1/2 lbs.			
5 Allen	650	\$27 00	Average weight, all round 769 lbs.			
9 Allen	650	24 25	" price, " \$37.54			
30 Vinton	600	19 00	HORSES.			
8	750	33 00	8 Piqua		\$125 00	
6 Clarke	700	32 75	5 Pennsylvania		115 00	
13 Greene	650	32 00	3 Urbana		210 00	
2	700	29 50	19 Madison		140 00	
2	500	20 00	—	35 head, averaging	\$133 00	
60 Vinton	500	18 50	SHEEP.			
30 Vinton	600	22 50	375		\$4 75	
21 Greene	750	41 60	168 Hardin		3 75	
10 Greene	500	24 00	—	543 head, averaging	\$4 43	
9	700	33 00	Total number of stock reported 1,177 head.			
39 Clarke	700	35 00	Total amount of cash sales \$29,545.55			
244 head, aver'g	617	\$26 39				
535 head of three, two and one year olds, averaging round 805 pounds, \$38.07, and weighing a total of 430,625 pounds, bringing cash \$20,328.25.						
OXEN—YOKES.						
1 Pickaway	2300	\$140 00				
1 Pickaway	3200	174 00				
1 Clinton	1600	86 30				

REMARKS.

The crowd of people was immense. Cattle brought an advance over the March offerings, especially for the better grades of yearlings and twos, which were in greatest demand.

The weather was as beautiful as could be desired, and not less than 700 cattle were in market, mostly sold. The horse market for eastern shipment was quite active, and fair prices were paid for good ones.

One Hundred and Ninety-Fifth Sale—Tuesday, May 7th, 1872.

CATTLE—THREE YEARS OLD.			HEIFERS—ONE YEAR OLD.		
No.	Weight.	Price.	No.	Weight.	Price.
14 Allen	1100	\$55 60	2 Greene	450	\$18 00
45 Clarke	900	44 60	3 "	375	15 05
16 "	1200	68 00	7 "	650	20 00
75 head, aver'g..	1001	\$51 65	12 head, aver'g..	556	\$17 60
CATTLE—TWO YEARS OLD.			BULLS.		
4	1100	\$57 70	1 Allen	1200	\$29 00
9	1025	43 50	1 Th. bred	1000	75 00
16 Allen	900	38 80	2 head, aver'g..	1100	\$52 00
23 Kentucky	800	40 25			
10	850	45 05	CALVES.		
19 Allen	775	29 45	10	450	\$13 00
21 Clarke	700	32 10	10 Franklin	400	20 00
18 Franklin	750	35 70	23 Greene	350	15 30
11	900	31 00	17 Franklin	500	20 00
15 Franklin	750	33 55	5 "	400	16 00
146 head, aver'g..	815	\$36 60	3	350	18 33
CATTLE—ONE YEAR OLD.			2 Clarke	400	22 50
13 Clarke	600	\$35 00	70 head, aver'g..	413	\$17 17
5 Logan	700	22 00			
14	700	37 00	Total number of cattle reported.	422 head.	
28 Hardin	500	21 00	" am't of cash sales—cattle.	\$14,264 94	
11 Clinton	550	30 55	" weight of all cattle	304,225 lbs.	
17 "	750	43 00	Average weight, all round	721 lbs.	
12	500	21 25	" price, all round	\$33 81	
100 head, aver'g..	599	\$29 93			
321 head of three, two and one year olds,	averaging round, 791 lbs., \$38.04 and weighing a total of 254,000 lbs., bringing in cash, \$12,210.10.				
MILCH COWS AND CALVES.			HORSES.		
1	650	\$29 25	1 head, Marysville		\$100 00
1	900	45 00	4 " Cincinnati		80 00
1	800	34 75	2 " Columbens		140 00
1	950	45 00	1 " Philadelphia		200 00
1	750	44 50	8 " Massachusetts		140 00
5 head, aver'g..	810	\$39 70	2 " Delaware, O		225 00
HEIFERS—TWO YEARS OLD.			4 " Harrisburgh, Pa		140 00
3 Allen	700	\$29 05	2 "		140 00
9 "	700	28 46	16 " Madison county		130 00
12 head, aver'g..	700	\$28 61	1 " Marysville		125 00
			6 " Columbus		140 00
			3 " Reading		150 00
			50 head, aver'g..		\$132 10
			Total number of stock reported,	472 head.	
			Total amount of cash sales,	\$20,873.98.	

REMARKS.

Weather fine. Farm work kept many at home. Offerings mostly of yearlings. Prices range from 4 to 6 cents per pound, an advance over last month. All sold and market supplied. Horse market active; Richman Bros., of Madison, took a car load, and quite a number of new Eastern buyers obtained a few, each.

One Hundred and Ninety-Sixth Sale—Tuesday, June 4th, 1872.

CATTLE—THREE YEARS OLD.		
No.	Weight.	Price.
16 Clarke	1100	\$55 00
25	1344	78 60
27 Cincinnati	925	47 40
12 Allen	1119	58 50
80 over	1106	\$60 33

CATTLE—TWO YEARS OLD.		
20 Greene	700	\$31 75
20	900	50 00
2 Franklin	800	32 30
7	728	35 25
13	800	39 50
20 Allen	800	31 25
32	730	30 25
12	900	40 00
2	800	37 70
2	850	36 50
17	975	50 05
15 Kentucky	850	38 00
12 Greene	930	43 75
60 Hardin	700	30 00
13 Pickaway	1000	50 40
7	850	32 00
30 Highland	850	33 50
31 Clinton	1000	53 00
16 Cincinnati	900	40 35
9 Clinton	800	39 00
42 Clarke	900	43 00
16	700	34 95
22	825	40 50
18 Clinton	800	37 15
20 Champaign	750	39 00
5	900	40 00

463 head, av'rage. 812..... 38 21

CATTLE—ONE YEAR OLD.		
16	700	39 50
13	600	31 00
16 Pickaway	525	16 25
10 Clinton	700	30 00
20 Greene	575	25 00
7 Clarke	625	26 50
82	613	27 57

625 head of three, two and one year olds, averaging round, 825 lbs., \$39 61, and weighing a total of 514,886 lbs., bringing in cash \$24,759 00.

OXEN—YOKES.		
No.	Weight.	Price.
1 Pair	2000	115 00
1 "	3500	210 50
4 "	3000	154 50
6 prs, av'g'ing	2917	157 25

MILCH COWS AND CALVES.		
1	900	48 00
1	1100	40 50
1	1200	50 00
3 head, av'rage	1067	46 17

DRY AND FAT COWS.		
6 Clinton	750	34 75
1 "	1200	54 00
7 head, av'rage	814	37 50

CALVES.		
11 Union	550	23 25
Total number of cattle reported. 658 head.		
"	a'm't of cash sales—cattle	\$26,359 25
"	weight of cattle	547,336 lbs
Average weight, all round		832 lbs
" price, "		\$40 06

HORSES.		
No.		Price.
16 head, draft		\$145 00
1 "		75 00
2 "		110 00
2 "		205 00
1 "		190 00
2 "		116 25
24 head, average		\$143 65

Total number of stock reported. 692 head
" amount of cash sales\$29,806 75

REMARKS.

Condition of stock generally first-rate; some of the best lots brought from six to six and a quarter—perhaps a half cents—per pound, an advance over last month. The average of sales, however, was just the same as in May. Two lots of 180 head were not offered. Fully 1,000 head were in the market. The horse demand has fallen off East, from various causes, and but few buyers were in the market.

The figures and averages below show a fine closing sale for our first six months of 1872, and prove that the interest and business of the sales is steadily advancing.

The tables following are—first, for the six months of this year, and next, a general showing of all averages, weights, prices, cents per pound, numbers, and grand totals, for the year, and will, we hope and trust, be of interest to careful examiners in the stock world.

The first six months of 1871, of last report, and the first six months of this, 1872, closing sale, will be found quite at variance in prices. Values of all stock having declined within the year.

RECAPITULATION.—First six months of 1872, showing the number sold (as per report), of each age and kind, and the total number of cattle, all ages, with the total number of stock of all kinds.

First Six Months of 1872.	CATTLE.											OTHER STOCK.		Total of all stock.	
	Three years.	Two years.	One year.	Total of 3, 2 and 1 year.	Calves.	Oxen—yokes.	Milch cows and calves.	Dry and fat cows.	Heifers, 2 years.	Heifers, 1 year.	Bulls.	Total of all cattle.	Horses.		Sheep.
January	181	238	143	562	....	6	4	...	....	....	...	578	56	....	634
February	228	290	253	771	26	8	1	6	....	....	1	821	123	....	944
March	296	147	230	673	59	6	3	3	....	5	1	756	65	....	821
April	123	168	244	535	22	6	4	....	7	20	....	599	35	543	1177
May	75	146	100	321	70	....	5	....	12	12	2	422	50	....	472
June	80	463	82	625	11	6	3	7	....	....	....	658	24	....	682
Totals	983	1452	1052	3437	188	32	20	16	19	37	4	3835	353	543	4731

Table of total weights, cash sales, and cents per pound, monthly, with average of each, of 3, 2 and 1 year old cattle; also, total pounds, sales, average price, and cents per pound of ALL neat stock, monthly; with totals and averages of all kinds and ages, together, for the first six months of 1872.

First Six Months of 1872.	Three, two and one year olds—total pounds.	Three, two and one year olds—total sales.	Three, two and one year olds—cents per pound.	All cattle—total pounds.	All cattle—total sales.	All cattle—average price.	All cattle—cents per pound.
January	529,755	\$24,736 70	4.67	548,105	\$25,687 00	\$44 91	4.69
February	613,975	31,504 00	5.13	656,425	33,257 00	40 51	5.07
March	617,380	30,541 49	4.94	662,530	32,754 24	43 33	4.95
April	430,625	20,328 25	4.72	476,275	22,486 30	37 54	4.72
May	254,000	12,210 10	4.81	304,225	14,268 94	33 81	4.69
June	514,886	24,759 00	4.81	547,336	26,359 25	40 06	4.81
Totals	2,960,621	\$144,079 54	.....	3,194,896	\$154,812 73	.....	.....
Averages	493,437	24,013 26	4.85	532,483	25,802 12	40 03	4.82

MADISON COUNTY CATTLE SALES.

Table showing the average prices of the different ages of cattle (with average weight), and the average price per head, of all ages, separately; also, average of 3, 2 and 1 year old cattle, together, for each month of the first half of 1872, and total average for the time of all kinds; with the addition of all other stock, reported monthly, and total for the first six months of 1872; also amount of cash sales monthly, and total.

	CATTLE.													
First six months of 1872.	Three years—lbs.	Three years—price.	Two years—lbs.	Two years—price.	One year—lbs.	One year—price.	Three, two and one year—lbs.	Three, two and one year—price.	Calves—lbs.	Calves—price.	Oxen, yokes—lbs.	Oxen, yokes—price.	Milch cows and calves—lbs.	Milch cows and calves—price.
January ..	1168	\$53 93	934	\$45 09	671	\$29 69	943	\$44 02	...	.....	2442	\$133 17	875	\$37 81
February ..	1155	55 01	860	38 30	661	31 09	797	40 86	468	\$15 78	2963	142 38	800	26 00
March ..	1111	59 08	928	46 52	666	28 32	918	45 39	363	17 82	2266	128 58	816	37 65
April	1128	59 06	843	39 48	617	26 39	805	38 07	400	19 70	2250	127 92	975	48 00
May	1001	51 65	815	36 60	599	29 93	791	38 04	413	17 17	.....	.....	810	39 70
June	1106	60 33	812	38 21	613	27 57	825	39 61	550	23 25	2917	157 25	1067	46 17
Av'ge for 6 mos.	1111	\$56 51	865	\$40 70	638	\$28 83	847	\$41 00	439	\$15 74	2568	\$137 86	891	\$39 22

TABLE—Continued.

First six months of 1872.	CATTLE.								OTHER STOCK.		
	Dry and fat cows—lbs.	Dry and fat cows—price.	Heifers, two years—lbs.	Heifers, two years—price.	Heifers, one year—lbs.	Heifers, one year—price.	Bulls—lbs	Bulls—price.	Horses—average price.	Sheep—average price.	Amount of sales.
January	816	\$25 46	.....	.....	.....	.....	900	\$25 00	\$116 60	.....	\$32,217 00
February	933	41 16	.....	.....	780	\$28 40	1000	26 00	115 61	.....	47,477 00
March .....	.....	.....	821	\$28 86	680	27 65	1000	26 00	111 20	.....	40,002 20
April .....	.....	.....	700	28 61	556	17 60	1100	52 00	133 00	\$4 43	29,545 55
May .....	.....	.....	.....	.....	.....	.....	.....	.....	132 10	.....	20,873 98
June	814	37 50	.....	.....	.....	.....	.....	.....	143 65	.....	29,806 75
Av. for 6 mos.	854	34 71	761	\$27 74	672	\$24 55	1000	\$34 33	\$125 36	\$4 43	\$33,320 41

Total sales for six months..... \$199,922.48

GENERAL RECAPITULATION.—One year, from July, 1871, to July, 1872, showing the total number sold (so far as reported, from half yearly reports,) of each age and kind, and the total number of cattle, all ages, with the total number of stock of all kinds, for whole time.

Years.	CATTLE.												OTHER STOCK			
	Three years.	Two years.	One year.	Total of three, two and one year.	Calves.	Oxen—yokes.	Milch cows and calves.	Dry and fat cows.	Heifers—three years.	Heifers—two years.	Heifers—one year.	Bulls.	Total of all cattle.	Horses.	Sheep.	Total of all stock.
1871—Last six months	851	816	649	2316	31	19	19	25	1	....	28	4	2464	195	....	2659
1872—First six months	983	1452	1052	3487	188	32	20	16	....	19	37	4	3835	353	543	4731
Total of both	1834	2268	1701	5803	219	51	39	41	1	19	65	8	6299	548	543	7390

Complete table of total weights, cash sales and cents per pound, for each six months of year, of three, two and one year old cattle; also, total pounds, sales, average price and cents per pound of all neat stock, for each six months of year, with totals and averages of all kinds and ages together, for the whole time from July, 1871, to July, 1872.

Year.	Three, two and one year olds—total pounds.	Three, two and one year olds—total sales.	Three, two and one year olds—cents per pound.	All cattle—total pounds.	All cattle—total sales.	All cattle—average price.	All cattle—cents per pound.
1871—Last six months, totals	2,214,273	\$92,703 86	.....	2,347,469	\$96,290 66	.....	.....
1871—Last six months, averages	369,046	15,451 48	4 21	391,248	16,381 78	\$39 36	4.20
1872—First six months, totals	2,960,621	144,079 54	.....	3,194,896	154,812 73	.....	.....
1872—First six months, averages	493,437	24,013 26	4.86	532,483	25,802 12	40 03	4.82
Totals for year	5,174,894	\$36,788 40	.....	5,542,365	\$253,103 39	.....	.....
Averages, each six mos.	431,242	19,732 37	4.53	461,866	21,091 96	39 70	4.51

NOTE.—This "complete table" was first added to our last year's report, and found so entirely satisfactory that it is continued in this—and will be found convenient for comparison of months of this year with last, as well as, one with another of these twelve sales.

Good cattle—and the better, smoother and heavier—always command the top prices. Blue grass is peculiarly suited to putting on a great number of pounds—often 300 to 400 in a summer's grazing—hence our stockmen find it desirable and economical to purchase the best stock obtainable for their pastures, and at an early age, so that all neat-stock may be fattened and marketed before three year's old if possible. This can only be done with choice high-grade, or full-blood short-horn steers, large numbers of which are monthly finding ready purchasers at these sales.

TOTAL TABLE.—Showing the average prices of the different ages of cattle (with average weights), and the average price per head, of all ages separately; also, average of 3, 2 and 1 year old cattle together, for the whole time of one year, from July, 1871, to July, 1872, and the total average, for the whole time, of all kinds; with the addition of the averages of all other stock reported for each six months, and total for the year. Also, amount of cash sales for each six months, and total for the year.

Years.	CATTLE.													
	Three years—lbs.	Three years—price.	Two years—lbs.	Two years—price.	One year—lbs.	One year—price.	Three, two and one year—lbs.	Three, two and one yr.—price.	Calves—lbs.	Calves—price.	Oxen, yokes—lbs.	Oxen, yokes—price.	Milch cows and calves—lbs.	Milch cows and calves—price.
Last 6 mos. of 1871 ...	1153	\$50 58	947	\$39 10	655	\$25 23	936	\$39 55	300	\$10 63	3218	\$176 68	911	\$33 75
First 6 mos. of 1872 ...	1111	56 51	865	40 70	638	28 83	847	41 00	439	15 74	2568	137 86	891	39 22
Average for year—from July to July	1132	\$53 55	906	\$39 90	647	\$27 03	892	\$40 28	370	\$13 19	2894	\$157 27	901	\$36 49

TOTAL TABLE—Continued.

Years.	CATTLE.										OTHER STOCK.		Amount of sales.
	Dry and fat cows—lbs.	Dry and fat cows—price.	Heifers, 3 years—lbs.	Heifers, 3 years—price.	Heifers, 2 years—lbs.	Heifers, 2 years—price.	Heifers, 1 year—lbs.	Heifers, 1 year—price.	Bulls—lbs.	Bulls—price.	Horses—average price.	Sheep—average price.	
Last 6 mos. of 1871....	941	\$33 93	1375	\$66 25	.....	.....	706	\$25 06	850	\$47 21	\$106 14	....	\$120,267 16 20,034 53
First 6 mos. of 1872....	854	34 71	.....	.....	761	\$27 74	672	24 55	1000	34 33	125 36	\$443	199,922 48 33,320 41
Av'ge for yr. —from July to July....	898	\$34 32	1375	\$66 25	761	\$27 74	698	\$24 81	825	\$40 77	\$115 75	\$443	\$26,677 47
Total amount of cash sales for the year											\$320,129 64		

CONCLUSION.

One year ago we wrote, that "the Madison County Cattle and Horse Sales have increased in results, in total value, in cash sales, in influence, both at home and abroad." Each of these sayings are truisms now, for this past year (except values and cash sales, which see below).

The number of all cattle sold (6,299 head), as against 5,401 head in '70 and '71, shows a large increase.

The average weight of three-year-old cattle is now 1132 pounds for the year, against 1101 pounds last year. Two-year-olds are now 906 pounds—last year 887 pounds. One-year-olds we report at 647 pounds, as against 614 pounds in 1871. Oxen, per yoke, are now averaged at 2894 pounds—last report gave these at 2660 pounds. In all of these which comprise the greater part of the whole sales, the increase is most satisfactory, and large.

The average weights being greater, and the numbers reported larger than last year, would of course make a larger number of pounds' weight; but on the other hand, the average prices, and cents per pound, for every age and kind, is largely reduced from the showing of 1871. Three-year-olds were, last year, \$64.13; this year, \$53.55. While the average of three, two and one-year olds together, from last report, was \$49.59 per head, it is but \$40.28 for these ages this year.

In last report, three, two and one-year olds brought an average of \$5.49 per hundred pounds. This year these ages bring \$4.53; a falling off of nearly *one dollar per hundred*, which is only in proportion with the general decline in values of all stock within the past twenty-four months. The total cash results, notwithstanding the decline in prices, is almost equal to last year, being about \$9,000 *less*, in the footings.

The number of horses purchased is larger than last year; the average price of these, in 1870 and '71, was \$113.37 per head. Our present report shows a small increase—being an average of \$115.75 for the year, and for the past six months, \$125.36, against \$116.12 in 1871.

We shall not pursue the comparisons farther, but for those who have not the former volume it may be of interest, so far as shown; and for those of our stock friends who are in possession of these and former reports, we trust a spirit of inquiry may have been encouraged, so that further comparisons of these increasing years of prosperous sales, may induce a careful study of what we of this great stock centre—of blue-grass Madison, in Central Ohio—have accomplished by nearly *seventeen* years of continuous sustaining of these monthly sales. That they are monthly, and yearly, growing in importance and general results, for the greater good of our stock-men as well as agriculturists, is beyond cavil, and none there are, of any class of our people, who would willingly dispense with the benefits.

IRVING F. WILLIS.

LONDON, O., July 1st, 1872.

LIVE STOCK ON TAX DUPLICATE IN OHIO.

Tabular Statement exhibiting the number and value of Domestic Animals, for the year 1872.

COUNTIES.	HORSES.		CATTLE.		MULES, ETC.		SHEEP.		HOGS.	
	No.	Value.	No.	Value.	No.	Value.	No.	Value.	No.	Value.
Adams	6,686	\$386,168	13,891	\$196,986	477	\$22,402	12,159	\$27,096	27,993	\$56,417
Allen	7,749	397,821	18,494	204,442	181	8,397	32,251	65,456	35,223	54,412
Ashland	8,959	539,720	23,428	354,886	105	7,297	34,163	185,047	25,424	67,404
Ashtabula	9,072	488,977	42,810	820,386	99	5,363	30,000	82,026	5,603	18,184
Athens	6,084	350,968	16,977	266,490	129	8,070	43,960	113,446	16,537	45,420
Auglaize	6,761	339,082	15,298	185,493	222	11,163	19,986	40,464	31,197	63,801
Belmont	10,648	821,148	24,907	504,691	267	23,514	157,159	553,298	26,162	77,037
Brown	8,603	507,839	15,960	270,039	567	36,642	15,329	42,991	39,454	107,019
Butler	10,899	819,410	16,900	346,568	530	49,304	5,458	20,895	44,856	180,149
Carroll	4,943	364,916	13,446	197,097	91	6,541	124,784	364,460	8,989	23,221
Champaign	9,065	717,533	17,764	497,061	222	19,486	39,806	185,652	33,483	130,261
Clarke	8,570	672,384	16,925	429,573	413	35,975	52,739	220,955	33,805	115,212
Clermont	9,024	579,546	13,385	272,386	892	65,863	10,383	31,454	32,073	86,006
Clinton	9,552	639,720	16,923	399,783	566	34,713	29,344	97,645	62,852	202,128
Columbiana	9,125	608,819	21,171	405,280	184	13,645	132,092	404,750	15,312	44,921
Coshocton	8,333	633,049	22,470	391,988	180	12,541	120,798	419,579	25,535	81,434
Crawford	8,489	537,625	21,183	317,254	130	8,106	63,330	213,210	34,040	83,718
Cuyahoga	13,216	909,840	27,170	566,508	259	17,590	24,220	68,998	7,193	22,924
Darke	11,719	769,480	25,924	390,463	322	25,006	16,677	50,183	54,646	143,465
Defiance	5,451	356,720	14,459	150,239	62	3,406	18,367	35,176	17,955	27,513
Delaware	8,994	607,784	19,265	379,103	178	10,835	95,078	325,990	29,657	83,692
Erie	6,075	359,158	11,758	180,065	55	3,421	33,902	81,644	11,203	20,965
Fairfield	10,585	694,124	24,783	491,291	287	17,718	34,022	82,151	48,517	149,915
Fayette	8,657	574,138	18,570	576,096	513	30,205	30,774	99,490	74,667	291,742
Franklin	14,611	988,703	23,691	561,254	568	32,536	32,733	117,489	55,477	183,982
Fulton	5,890	237,596	17,916	187,103	411	4,155	40,438	48,694	19,446	26,913
Gallia	6,215	377,314	16,384	275,351	119	28,787	17,967	42,953	16,192	34,446
Geauga	4,893	311,160	31,016	527,907	96	6,430	17,777	51,908	3,564	12,351
Greene	10,002	778,435	17,486	425,885	422	28,020	40,567	149,477	52,191	202,974
Guernsey	7,338	459,437	18,472	310,506	175	11,136	158,060	485,151	14,038	47,352

LIVE STOCK ON TAX DUPLICATE IN OHIO FOR 1872—Continued.

COUNTIES.	HORSES.		CATTLE.		MULES, ETC.		SHEEP.		HOGS.	
	No.	Value.	No.	Value.	No.	Value.	No.	Value.	No.	Value.
Hamilton	18,697	\$1,416,217	19,957	\$576,644	1,304	\$103,137	3,399	\$10,362	34,640	\$136,465
Hancock	9,975	472,201	25,843	305,965	138	7,165	52,742	148,492	43,727	102,963
Hardin	6,710	306,360	14,937	225,208	296	11,236	37,291	83,665	24,646	50,941
Harrison	5,814	442,786	15,072	294,752	153	9,935	209,972	703,780	11,064	40,150
Henry	4,326	174,596	11,243	113,264	147	5,100	11,217	20,180	13,027	21,009
Highland	10,608	626,918	20,722	429,820	943	49,499	15,874	37,416	55,328	155,471
Hocking	4,888	282,498	13,263	194,083	197	12,560	25,003	62,706	15,746	38,146
Holmes	6,880	376,824	17,187	200,917	120	6,360	56,244	164,963	23,489	58,997
Huron	9,921	557,130	28,420	484,507	102	5,086	84,717	176,255	19,818	39,329
Jackson	4,730	251,925	14,675	232,956	517	34,601	12,788	19,998	11,664	22,479
Jefferson	6,135	508,668	15,122	304,131	117	9,279	162,733	568,852	12,423	39,993
Knox	10,429	622,034	22,868	337,934	207	13,558	134,273	412,983	28,150	69,043
Lake	4,089	249,492	12,697	267,473	45	3,265	19,810	65,527	2,248	8,889
Lawrence	4,566	323,441	14,442	289,477	632	52,035	7,689	11,473	15,970	33,943
Licking	12,878	898,472	98,696	583,497	178	13,270	225,040	856,254	35,963	111,558
Logan	8,670	549,847	20,877	410,325	364	22,436	45,095	136,089	34,692	84,546
Lorain	5,582	593,270	37,832	745,197	105	5,885	60,177	188,424	11,982	36,694
Lucas	5,332	295,207	10,125	149,546	105	4,819	9,788	14,811	9,390	16,349
Madison	7,453	482,289	20,046	611,390	290	21,059	97,466	404,696	47,860	156,208
Mahoning	8,298	555,890	23,805	555,478	219	15,096	64,626	226,375	10,289	35,048
Marion	7,295	514,162	17,586	446,508	103	8,405	86,045	306,928	29,213	84,734
Medina	8,164	505,885	30,485	595,738	53	3,280	56,159	169,301	10,629	32,186
Meigs	5,704	355,765	14,968	281,130	381	23,271	17,940	49,894	12,905	32,375
Mercer	6,654	274,068	14,875	159,330	196	7,105	17,000	34,602	31,382	48,253
Miami	9,586	767,442	16,100	334,131	293	25,655	10,733	39,750	30,230	113,890
Monroe	6,680	396,697	20,209	329,327	156	9,155	32,523	84,208	16,847	42,454
Montgomery	12,952	1,007,852	19,445	372,925	256	23,005	5,110	13,025	37,853	139,163
Morgan	6,971	448,355	18,601	302,961	129	9,855	63,547	193,750	17,494	62,890
Morrow	8,309	553,272	20,494	355,580	107	8,175	111,769	381,843	19,095	54,504
Muskingum	12,002	772,232	32,084	562,516	219	16,685	139,633	439,290	27,920	87,252
Noble	6,170	447,653	20,978	319,492	133	8,755	53,650	161,580	20,288	57,162
Ottawa	3,710	213,505	8,286	120,569	46	2,089	18,676	40,923	11,743	22,897

Paulding	2,810	130,476	7,218	83,013	75	3,960	5,672	11,750	8,757	10,256
Perry	5,787	289,872	18,712	236,188	88	4,955	64,740	148,185	15,042	37,888
Pickaway	10,346	662,058	23,186	613,421	517	41,820	21,776	56,757	69,108	257,887
Pike	5,023	310,990	9,660	177,907	356	26,355	8,462	22,782	19,789	55,258
Portage	7,903	590,833	35,981	870,785	97	6,362	41,345	127,678	7,394	24,062
Preble	8,499	683,920	16,057	323,707	182	17,560	8,208	31,117	45,861	189,679
Putnam	6,008	291,613	17,000	199,469	168	7,916	19,061	49,603	26,568	59,631
Richland	9,685	737,252	22,504	367,594	230	17,596	69,274	240,773	28,632	79,572
Ross	11,683	792,125	23,497	574,947	470	39,745	15,512	47,853	61,508	206,370
Sanduaky	8,283	476,413	18,446	255,660	134	7,714	37,852	81,515	24,250	45,792
Scioto	1,471	363,503	13,079	233,950	688	63,792	7,718	14,520	17,901	49,756
Seneca	10,447	636,978	23,118	271,405	111	6,586	79,942	237,070	36,124	82,760
Shelby	7,511	500,211	13,629	231,994	168	11,645	21,469	63,709	25,882	74,061
Stark	13,140	959,106	34,756	540,589	216	17,570	71,053	193,874	34,992	91,800
Summit	8,009	594,688	27,866	510,551	147	13,319	29,784	76,692	12,956	34,082
Tuscarawas	9,303	638,769	42,610	881,055	262	18,791	37,745	128,868	7,321	25,652
Trumbull	9,290	578,894	27,238	347,362	219	13,495	103,793	266,386	12,815	55,382
Union	7,972	557,825	15,932	391,876	306	18,035	78,087	315,861	30,496	86,972
Van Wert	5,533	295,578	14,325	190,478	160	7,765	17,290	40,159	26,106	44,208
Vinton	3,675	203,316	10,597	178,852	335	21,872	17,577	51,726	8,501	18,012
Warren	9,477	715,013	15,127	342,017	295	25,740	13,374	48,301	40,470	156,228
Washington	8,480	518,085	22,667	362,700	208	14,708	42,225	116,812	17,159	46,833
Wayne	11,709	817,911	33,965	451,569	214	16,680	58,878	177,244	34,045	83,891
Williams	7,184	352,357	18,006	196,017	104	4,850	26,374	51,901	24,408	38,382
Wood	8,164	433,049	20,576	258,237	144	9,001	24,675	37,941	24,268	38,202
Wyandot	7,140	383,792	15,358	236,364	112	6,755	85,650	262,750	24,622	56,940
Totals	718,157	46,397,554	1,761,623	31,902,348	22,958	1,589,535	4,464,898	13,843,810	2,315,554	6,663,421

Amount of Wheat, Rye and Buckwheat produced in the year 1871.

COUNTIES.	WHEAT.		RYE.		BUCKWHEAT.	
	No. acres.	No. bushels.	No. acres.	No. bushels.	No. acres.	No. bushels.
Adams	18,289	107,384	176	1,459	56	545
Allen	18,570	274,849	542	9,415	95	1,218
Ashland	21,080	339,044	592	7,670	155	1,846
Ashtabula	8,117	104,022	80	967	177	2,019
Athens	15,535	162,936	144	1,664	137	1,631
Auglaize	18,003	269,634	491	8,152	240	3,210
Belmont	20,683	234,125	202	2,051	276	3,174
Brown	20,571	197,442	1,342	12,967	76	955
Butler	34,318	384,427	147	1,316	111	1,375
Carroll	14,133	177,165	762	7,510	267	2,677
Champaign	33,554	608,226	166	2,300	52	818
Clarke	29,950	475,029	842	11,432	45	554
Clermont	15,619	163,519	775	7,486	205	2,332
Clinton	19,121	223,867	333	2,982	117½	1,191
Columbiana	17,329	257,683	705	8,206	392	3,788
Coshocton	25,032	238,990	285	3,181	402	7,494
Crawford	20,725	276,205	341	3,904	105	1,279
Cuyahoga	3,592	54,318	744	11,185	95	1,553
Darke	56,783	669,355	959	15,879	210	2,763
Defiance	14,139	210,567	81	1,293	385½	3,586
Delaware	14,518	190,249	338	4,218	125	1,239
Erie	9,784	170,033	132	2,068	250	3,461
Fairfield	38,434	492,063	569	6,519	53	568
Fayette	6,761	93,153	935	12,328	15	197
Franklin	27,123	437,952	1,496	11,067	94	875
Fulton	15,476	273,535	161	2,024	394	5,513
Gallia	19,633	149,531	129	967	175	1,152
Geauga	2,903	35,829	77	833	61	688
Greene	29,615	421,261	593	6,688	29	435
Guernsey	15,182	107,229	288	1,967	488	4,722
Hamilton	8,615	119,911	1,719	13,752	133	1,909
Hancock	29,196	458,536	158	2,230	111	1,779
Hardin	14,468	246,315	138	1,843	108	1,371
Harrison	12,453	150,448	355	2,880	89½	1,003
Henry	12,359	204,256	187	2,980	226	2,679
Highland	33,961	254,744	201	1,478	43	325
Hocking	14,281	104,490	264	2,204	241	2,109
Holmes	21,510	289,060	684	6,730	514	5,405
Huron	17,127½	277,298	80	1,027	210	2,849
Jackson	10,528	28,516	80	427	118	817
Jefferson	14,014	198,827	287	2,988	60	596
Knox	22,876	272,890	753	9,015	293	3,165
Lake	4,024	56,324	159	1,672	131	1,976
Lawrence	9,606	62,366	21	385	32	183
Licking	28,735	342,118	729	6,876	125	1,211
Logan	29,803	465,880	238	2,960	133	1,900
Lorain	8,900	142,435	153	1,825	49	710
Lucas	5,873	156,667	172	2,322	267	8,962
Madison	6,966	131,511	1,465	20,440	35	375
Mahoning	9,274	129,967	364	3,879	135	1,285
Marion	15,266	192,202	332	3,857	46	720
Medina	8,906	133,050	309	3,941	89	1,276
Meigs	15,559	148,827	549	2,967	156	1,678
Mercer	21,146	289,082	676	7,091	181	1,805
Miami	38,360	598,150	396	6,242	42	760
Monroe	14,756	126,299	339	3,369	392	3,438

Amount of Wheat, Rye and Buckwheat produced in 1871—Continued.

COUNTIES.	WHEAT.		RYE.		BUCKWHEAT.	
	No. acres.	No. bushels.	No. acres.	No. bushels.	No. acres.	No. bushels.
Montgomery	39,086	559,289	754	6,917	47	779
Morgan	15,997	151,110	87	686	160	1,918
Morrow	11,294	137,623	357	3,908	183	2,453
Muskingum	26,270	231,219	299	2,954	212	2,260
Noble	14,424	108,459	122	788	145	1,437
Ottawa	5,646	106,960	66	1,292	131	1,948
Paulding	4,698	61,597	68	954	150	1,772
Perry	17,303	172,548	346	2,572	214	1,623
Pickaway	28,010	451,820	993	14,348	28	241
Pike	8,346½	41,573½	184	970	117½	910
Portage	9,392	130,223	424	4,553	101	734
Preble	38,548	468,222	137	1,486	67	673
Putnam	15,131	256,396	484	8,148	211	2,756
Richland	26,057	373,977	924	10,122	332	3,733
Ross	26,870	245,059	887	8,614	23	240
Sandusky	24,918	418,538	258	4,136	184	2,731
Scioto	4,831	42,861	14	69	156	1,160
Seneca	42,409	738,849	296	4,116	121	1,252
Shelby	28,448	396,566	349	3,564	159	1,526
Stark	39,772	659,902	637	8,110	156	1,901
Summit	17,083	313,264	448	5,650	106	1,356
Trumbull	6,080	82,442	458	5,076	292	2,845
Tuscarawas	28,878	349,044	575	5,806	463	4,961
Union	14,216	207,900	312	4,994	134	1,618
Van Wert	11,463	191,506	820	13,480	196	2,434
Vinton	7,663	47,053	48	268	147	1,208
Warren	20,275	229,968	156	2,612	190	2,335
Washington	22,010	209,921	484	4,871	460	5,137
Wayne	33,966	573,025	569	6,082	118	1,537
Williams	19,922	354,329	46½	614	100	1,362
Wood	15,777	269,114	210	3,040	452	6,416
Wyandot	20,734	324,228	145	2,361	154	1,700
Totals.....	1,677,659½	22,274,378½	37,207	428,014	14,972	177,938

Amount of Oats, Barley and Corn produced in the year 1871.

COUNTIES.	OATS.		BARLEY.		CORN.	
	No. acres.	No. bushels.	No. acres.	No. bushels.	No. acres.	No. bushels.
Adams	10,605	189,359	248	4,356	33,910	932,068
Allen	10,221	431,599	189	4,493	27,352	1,055,350
Ashland	17,829	686,943	576	14,343	22,381	915,176
Ashtabula	7,451	615,892	65	1,210	15,047	604,371
Athens	5,370	100,305	17	516	23,977	873,174
Auglaize	13,316	473,101	2,031	55,199	29,335	1,021,103
Belmont	15,773	474,396	1,300	20,232	26,128	1,317,528
Brown	13,956	345,216	1,069	17,040	42,035	1,337,374
Butler	9,440	266,318	16,887	400,968	58,723	2,522,690
Carroll	15,061	404,276	93	1,983	14,110	596,695
Champaign	8,778	332,453	396	12,208	41,302	1,654,675
Clarke	7,535	300,511	1,022	27,355	38,198	1,531,459
Clermont	19,143	449,694	436	8,408	43,416	1,477,296
Clinton	5,794½	143,241	288½	6,090	57,746	2,450,864
Columbiana	18,470	571,400	247	4,130	20,318	731,000
Coshocton	14,000	441,890	25	490	34,249	1,365,299
Crawford	16,771	698,711	295	7,010	26,829	1,022,548
Cuyahoga	13,540	498,403	91	2,095	111,810	532,751
Darke	17,112	699,271	3,285	105,584	50,194	1,995,068
Defiance	9,092½	297,003	228½	6,543	14,399½	528,468
Delaware	7,969	277,349	85	2,452	33,409	1,093,574
Erie	10,851	407,152	918	24,286	19,436	669,597
Fairfield	12,358	307,227	1,944	58,317	52,074	2,083,754
Fayette	1,060	29,855	-----	-----	41,022	1,872,811
Franklin	11,333	314,000	578	11,007	64,589	2,129,385
Fulton	9,671	354,419	165	5,183	14,797	608,576
Gallia	10,076	185,578	2	14	24,566	709,737
Geauga	8,694	301,498	36	512	5,984	255,932
Greene	5,090	154,459	1,564	41,562	49,029	2,391,841
Guernsey	11,150	306,031	115	2,767	26,243	876,264
Hamilton	10,336	264,836	4,261	95,233	29,363	1,213,631
Hancock	11,906	500,682	298	6,259	36,385	1,552,088
Hardin	7,282	311,137	45	954	23,029	891,839
Harrison	9,080½	299,855	226½	4,370	17,072	742,662
Henry	6,134	227,392	111	3,266	15,554	653,415
Highland	9,038	196,268	23	493	57,674	1,947,544
Hocking	5,614	98,053	176	3,487	18,933	582,674
Holmes	18,030	673,300	342	7,002	21,940	731,900
Huron	22,008½	834,777	683½	16,271	28,526½	1,018,294
Jackson	8,758	153,768	-----	-----	18,247	460,971
Jefferson	11,761	336,844	859	13,803	15,646	694,891
Knox	14,832	532,068	148	3,489	36,616	1,091,229
Lake	5,914	211,335	354	8,171	5,876	248,415
Lawrence	6,013	108,760	-----	-----	19,367	544,071
Licking	14,881	410,101	78	2,252	51,180	1,622,158
Logan	9,516	265,144	93	2,653	34,114	1,290,261
Lorain	13,738	575,667	1,153	21,392	17,800	725,658
Lucas	7,317	277,740	100	3,216	12,822	603,202
Madison	3,942	131,439	169	1,670	58,542	2,545,268
Mahoning	13,004	398,929	57	1,075	11,734	531,440
Marion	11,387	452,340	36	1,099	34,746	1,252,625
Medina	14,790	516,417	175	3,049	17,185	540,111
Meigs	6,098	116,944	171	3,842	16,193	469,636
Mercer	13,295	429,512	858	21,794	26,240	907,715
Miami	14,438	562,000	6,992	119,464	46,827	1,781,505
Monroe	13,403	311,690	46	719	20,381	728,963
Montgomery	13,182	514,138	4,484	135,201	38,751	1,533,967

Amount of Oats, Barley and Corn produced in 1871—Continued.

COUNTIES.	OATS.		BARLEY.		CORN.	
	No. acres.	No. bushels.	No. acres.	No. bushels.	No. acres.	No. bushels.
Morgan	5,925	145,267	10	266	20,552	850,391
Morrow	12,857	516,139	79	1,054	23,708	742,580
Muskingum	11,634	294,380	169	3,593	33,619	1,278,217
Noble	8,231	203,868	8	164	23,793	970,672
Ottawa	3,898	162,542	225	6,191	7,819	360,138
Paulding	3,026	84,045	21	490	7,525	279,577
Perry	5,360	129,542	455	12,695	19,494	699,129
Pickaway	3,180	77,693	255	7,718	81,947	3,097,957
Pike	7,673	126,220	613	7,566	27,614	747,630
Portage	12,579	434,943	615	10,413	11,200	587,557
Preble	12,535	389,660	2,048	52,278	43,266	1,720,119
Putnam	6,787	251,992	75	1,574	25,737	1,100,291
Richland	24,448	928,842	761	18,849	26,331	931,909
Ross	6,365	115,516	664	15,606	76,311	2,522,678
Sandusky	15,904	557,585	509	13,298	24,069	1,009,739
Seioto	9,385	160,726	805	15,279	35,710	867,545
Seneca	20,550	801,790	264	6,227	34,658	1,205,924
Shelby	15,919	571,222	1,404	39,940	29,561	1,125,938
Stark	23,798	928,685	4,932	107,122	26,494	1,345,277
Summit	13,974	510,215	1,322	23,660	14,349	839,992
Trumbull	13,918	474,392	7	93	12,869	658,778
Tuscarawas	23,562	717,784	289	6,313	23,104	938,204
Union	9,643	313,299	77	2,095	38,600	1,361,966
Van Wert	7,745	285,231	102	2,421	19,529	839,786
Vinton	2,963	71,059	6	55	13,758	396,515
Warren	12,168	306,733	8,164	239,477	49,208	2,136,382
Washington	12,291	231,099	.....	.....	26,351	892,494
Wayne	25,016	942,010	913	16,587	29,325	1,275,050
Williams	12,351	424,453	73	1,185	19,076	718,143
Wood	14,736	501,549	164	5,117	36,597	1,346,374
Wyandot	8,453	357,160	88	2,337	24,640	953,527
Totals	1,000,122½	32,696,127	81,252½	1,941,240	2,682,165½	98,363,060

Amount of Meadow and Clover for the year 1871.

COUNTIES.	MEADOW.		CLOVER.			
	No. acres.	Tons hay.	Acres.	Tons hay.	Bushels seed.	Acres plowed under for manure.
Adams	7,524	5,758	2,758	641	1,008	202
Allen	12,095	12,355	6,896	5,975	11,438	254
Ashland	18,372	20,851	13,101	12,002	11,911	122
Ashtabula	50,104	77,241	771	864	141	67
Athens	13,166	11,628	660	565	224	127
Auglaize	8,719	9,456	4,324	4,845	7,667	860
Belmont	21,323	24,317	2,824	2,889	2,483	100
Brown	10,689	8,704	3,780	748	74	631
Butler	7,644	8,053	7,780	990	167	12,601
Carroll	18,060	15,820	3,847	3,821	3,792	357
Champaign	10,798	12,566	2,717	2,338	3,048	336
Clarke	12,166	15,280	4,125	3,188	1,842	750
Clermont	17,458	15,019	3,295	954	118	497
Clinton	10,179	10,172	1,819	923	1,119	181
Columbiana	25,464	27,582	9,476	9,677	8,039	163
Coshocton	18,171	18,836	3,339	2,048	2,559	451
Crawford	14,297	20,441	12,205	16,016	13,759	351
Cuyahoga	37,327	41,469	476	637	.....	20
Darke	8,226	9,475	11,895	5,089	3,612	2,377
Defiance	7,529½	8,417½	7,820½	7,884½	7,166½	573
Delaware	23,171	26,148	2,870	3,404	2,204	60
Erie	11,326	12,669	3,247	2,472	4,478	567
Fairfield	11,961	13,442	8,258	4,403	6,065	1,383
Fayette	4,534	4,897	872	147	319	15
Franklin	17,774	19,046	2,736	1,606	1,230	502
Fulton	12,539	15,642	8,879	10,342	8,764	322
Gallia	10,787	9,549	1,719	465	90	192
Geauga	35,119	37,577	229	334	10	2
Greene	8,275	9,462	5,738	1,834	997	1,352
Guernsey	23,518	22,572	1,375	1,289	1,194	32
Hamilton	10,447	11,206	2,383	1,716	47	354
Hancock	13,982	18,078	12,015	12,924	26,633	268
Hardin	11,920	14,013	4,339	2,794	5,422	116
Harrison	22,872	27,739	1,753	1,847	1,282	20
Henry	6,468	8,646	4,094	4,960	6,108	384
Highland	14,323	16,005	2,394	863	553	133
Hocking	9,260	7,579	2,798	1,148	1,068	38
Holmes	13,400	17,160	9,887	9,278	7,798	101
Huron	27,659	32,280	8,225½	10,258	11,158	818
Jackson	13,518	10,902	655	167	66	20
Jefferson	19,164	20,436	2,988	2,716	3,665	75
Knox	21,660	24,144	6,601	5,074	4,608	158
Lake	14,346	16,702	1,334	1,266	389	92
Lawrence	3,688	4,237	3,306	409	3	151
Licking	27,911	25,780	3,367	2,168	1,097	144
Logan	12,951	15,350	6,134	4,790	5,481	330
Lorain	38,930	41,356	949	1,255	1,289	14
Lucas	11,123	15,691	3,727	12,852	3,646	319
Madison	13,781	14,563	298	170	4	7
Mahoning	29,964	32,305	4,440	4,811	4,962	119
Marion	17,172	21,805	4,051	4,878	8,449	115
Medina	32,798	36,060	5,060	5,070	9,786	44
Meigs	16,272	10,024	594	385	66	319
Mercer	7,502	10,722	4,932	4,834	4,417	377
Miami	6,467	7,419	5,940	2,736	2,428	2,018

Amount of Meadow and Clover for the year 1871—Continued.

COUNTIES.	MEADOW.		CLOVER.			
	No. acres.	Tons hay.	Acres.	Tons hay.	Bushels seed.	Acres plowed under for manure.
Monroe	14,405	13,291	2,588	2,214	2,500	62
Montgomery	9,320	9,822	18,582	5,177	2,918	4,797
Morgan	12,927	12,158	2,587	2,046	1,620	96
Morrow	22,730	29,362	6,337	6,897	9,407	265
Muskingum	25,672	23,209	2,963	2,226	1,385	44
Noble	15,665	15,390	2,500	1,604	806	123
Ottawa	6,306	9,733	1,518	2,489	2,676	47
Paulding	3,600	5,478	1,299	1,591	1,242	145
Perry	15,902	17,164	1,521	965	883	50
Pickaway	8,124	8,017	3,665	1,017	1,866	298
Pike	5,719½	4,098½	686	172½	53½	20
Portage	36,851	37,922	3,514	4,109	1,940	45
Preble	4,211	4,035	9,361	2,264	1,285	1,504
Putnam	8,682	10,967	4,127	4,487	7,641	369
Richland	17,458	22,113	15,625	14,092	14,020	676
Ross	7,168	5,467	6,500	838	350	398
Sandusky	4,279	11,622	11,019	14,105	11,316	395
Scioto	923	8,013	951	374	15	202
Seneca	17,626	21,747	17,567	19,264	17,646	655
Shelby	7,976	8,575	3,315	2,723	2,399	399
Stark	15,154	17,442	22,652	26,528	13,723	1,059
Summit	21,249	22,429	7,820	8,272	5,590	113
Trumbull	50,871	55,416	743	1,068	126	85
Tuscarawas	20,029	26,216	9,314	9,209	11,153	159
Union	19,199	21,061	1,305	1,644	1,137	60
Van Wert	8,394	11,093	3,041	3,949	4,937	211
Vinton	10,269	7,415	589	171	54	35
Warren	9,222	9,199	4,115	1,512	227	1,268
Washington	17,283	14,710	2,367	1,808	954	261
Wayne	15,678	19,120	22,365	24,504	19,021	393
Williams	9,143	10,437	12,013	13,494	10,018	305
Wood	14,976	17,907	5,863	7,009	11,595	267
Wyandot	14,911	17,533	5,271	5,434	8,407	211
Totals	1,377,876	1,526,806	454,099½	401,415½	384,974	46,998

Amount of Flax and Potatoes produced in the State in 1871.

COUNTIES.	FLAX.			POTATOES.	
	No. acres.	No. bushels seed.	No. pounds fiber.	No. acres.	No. bushels.
Adams	6	22	600	350	19,110
Allen	2,431	23,032	169,100	857	62,867
Ashland	2,460	28,932	708,209	1,144	109,445
Ashtabula	241	2,173	265,218	2,802	351,267
Athens				960	70,603
Auglaize	558	5,360	8,500	747	51,021
Belmont	1	14	260	1,029	122,283
Brown	7	38	104	659	42,121
Butler	690	5,651	105	1,077	48,577
Carroll	100	818	93	510	66,989
Champaign	194	2,249	13,900	564	56,235
Clarke	1,427	14,587	593,500	812	64,598
Clermont	473	3,152	24,945	3,768	201,284
Clinton	3,424	21,310	319,800	805	49,258
Columbiana	1,687	17,547	1,282,554	1,206	148,386
Coshocton	8	74		963	94,646
Crawford	602	6,683	16,000	1,184	113,970
Cuyahoga				3,949	382,439
Darke	2,249	25,257	23,366	1,247	110,627
Defiance	825	6,523	204,950	597	42,379
Delaware	4,359	42,768	3,431,922	894	64,691
Erie				1,847	211,511
Fairfield	5	41	640	1,076	93,022
Fayette	299	3,185	173,200	246	20,354
Franklin	103	811	300	2,681	180,168
Fulton	365	3,841	55,200	835	70,276
Gallia	2	1	216	953	69,224
Geauga	233	2,454	52,560	1,346	152,265
Greene	4,222	37,998	1,640,434	699	59,807
Guernsey	2	8	125	653	68,050
Hamilton	35	210		3,774	232,304
Hancock	5,968	35,197	734,970	1,032	94,106
Hardin	593	4,156	48,100	714	60,132
Harrison	1	18	1,000	463	58,595
Henry	88	972	37,680	745	67,407
Highland	214	250	125	703	45,812
Hocking	96	206	609	730	44,994
Holmes	7	66	6,200	707	80,020
Huron	113	1,310	3,000	1,492	151,290
Jackson				492	32,154
Jefferson				730	76,154
Knox	1,491	15,771	218,046	1,000	78,675
Lake	18	205	7,000	3,764	403,139
Lawrence	4	16	345	344	2,838
Licking	235	3,322	58,800	1,214	92,453
Logan	691	5,673	89,840	628	64,044
Lorain	28	1,452	67,532	1,711	195,901
Lucas	119	1,097	45,167	1,852	204,293
Madison	599	5,520	302,300	363	23,309
Mahoning	2,516	26,622	1,913,572	1,057	122,629
Marion	675	5,753	69,800	1,000	59,599
Medina	1,254	14,890	542,595	1,035	115,603
Meigs				1,443	107,399
Mercer	2,492	22,225	6,900	689	32,441
Miami	3,033	33,083	283,898	1,507	68,655
Monroe	1	9	185	902	76,448

Amount of Flax and Potatoes produced in 1871—Continued.

COUNTIES.	FLAX.			POTATOES.	
	No. acres.	No. bushels seed.	No. pounds fiber.	No. acres.	No. bushels.
Montgomery	3,364	31,347	730,249	1,695	94,169
Morgan	8½	5	100	607	52,879
Morrow	4,373	38,818	1,183,530	797	61,395
Muskingum	18	182	150	1,290	86,307
Noble			14	603	50,125
Ottawa				703	65,397
Paulding	182	1,371	1,732	292	19,474
Perry	57	183	290	1,183	60,075
Pickaway				640	42,410
Pike	8½	44	595	533	32,798
Portage	2,453	27,228	2,293,925	2,230	259,922
Preble	2,072	17,951	324,163	590	55,973
Putnam	444	4,122	2,350	750	61,461
Richland	7,383	7,564	103,400	1,571	133,952
Ross	13½	71	127	1,028	59,636
Sandusky		56		1,755	185,298
Scioto	6	5		640	61,638
Seneca	172	1,589		1,281	133,119
Shelby	1,772	17,519	472,482	722	55,362
Stark	1,176	12,641	1,085,790	1,645	180,135
Summit	36	410	31,000	1,374	159,600
Trumbull	2,595	23,892	1,831,051	1,525	185,016
Tuscarawas	170	1,691	150	965	104,842
Union	1,505	11,474	491,849	674	49,900
Van Wert	1,480	14,786	4,646	562	42,510
Vinton	7	21	305	489	30,023
Warren	3,325	27,420	303,173	1,472	74,410
Washington	2	43	2,020	2,241	179,453
Wayne	2,055	23,468	1,498,778	1,518	168,208
Williams	3,193	29,504	486,690	511½	35,071
Wood	839	6,594	105,309	1,390	122,517
Wyandot	101	850	28	796	64,251
Totals	85,863	733,384½	24,477,361	100,630½	8,755,193

Amount of Tobacco, Butter, Cheese and Sorghum produced in Ohio in 1871.

COUNTIES.	TOBACCO.		BUTTER.	CHEESE.	SORGHUM.		
	Acres planted.	Pounds produced.	No. pounds.	No. pounds.	No. acres.	No. pounds sugar.	No. gallons syrup.
Adams	108	144,065	314,358	1,550	348	.....	25,960
Allen	3	1,480	473,311	1,225	211	21	15,928
Ashland	1	2,100	658,855	806,798	53½	8	2,929
Ashtabula	29	48,277	998,166	4,133,335	.....	.....	41
Athens	145½	132,690	467,722	18,785	368½	6,761	30,927
Auglaize	41	30,410	299,692	4,550	464	92	29,035
Belmont	1,386	1,511,678	750,546	1,677	397	.....	45,232
Brown	3,251	2,928,422	459,743	3,230	551	440	46,415
Butler	493	893,989	404,377	2,545	193	82	15,966
Carroll .....	.....	.....	578,257	150	75	25	6,979
Champaign	8	5,462	402,351	158,581	147	464	16,885
Clarke	55½	59,881	431,129	1,290	188½	20	15,234
Clermont	1,447	1,251,225	487,657	895	658	248	53,903
Clinton	18½	16,420	385,954	11,673	365	960	32,428
Columbiana	1	125	727,005	62,420	76½	508	6,132
Coshocton	1½	1,540	672,043	26,068	332	50	28,382
Crawford	2	2,185	544,125	1,465	69	144	5,383
Cuyahoga	6	730	883,682	2,442,060	1	13	441
Darke	1,835	3,965,830	625,949	350	839	39	53,221
Defiance	116½	71,523	417,438	6,377	334	.....	21,469
Delaware	1½	1,300	529,997	3,790	200	.....	15,537
Erie .....	.....	.....	332,487	93,457	36	84	3,672
Fairfield	17	7,030	609,313	252	596	137	29,244
Fayette	1	100	240,185	490	44½	65	6,090
Franklin	16	1,800	540,678	1,197	460	81	27,287
Fulton	1	452	547,686	307,207	100	.....	9,062
Gallia	44	22,073	371,342	10,381	780	.....	50,649
Geauga .....	.....	.....	565,920	5,095,764	.....	.....	.....
Greene	637	705,711	287,224	502	200	.....	19,963
Guernsey	553	593,936	590,835	3,319	478	2,562	46,122
Hamilton	7	665	417,404	3,125	262	147	5,802
Hancock	2½	522	721,775	1,480	169	74	12,964
Hardin	3½	875	344,365	1,280	112	877	9,494
Harrison	39½	41,237	607,414	3,045	175½	.....	17,565
Henry	24	6,670	253,316	12,670	187	.....	18,536
Highland	16½	5,872	453,451	3,022	487	20	44,424
Hocking	42½	34,881	351,964	2,884	398	145	34,930
Holmes	5	3,500	506,480	18,580	128	150	11,170
Huron	2½	380	972,744	367,187	89	178	6,711
Jackson	9	4,958	274,690	6,105	422	.....	33,148
Jefferson .....	.....	180	414,812	1,120	115½	1,281	10,901
Knox	12	5,200	654,717	5,205	91	.....	6,183
Lake	16	18,950	276,131	332,530	3	.....	207
Lawrence	54	30,621	183,022	910	817	.....	60,108
Licking	4	1,027	803,497	9,988	277	534	22,856
Logan	3	1,851	499,070	9,706	211	665	15,785
Lorain	17	7,145	1,030,556	5,496,690	76	494	14,068
Lucas	19½	18,490	228,830	13,450	72½	315	4,118
Madison	1½	677	225,393	51,640	112	53	7,772
Mahoning	1	60	634,189	56,450	38	540	2,909
Marion	4½	988	394,982	2,850	86½	248	5,908
Medina	199	239,490	937,720	3,004,892	8½	68	653
Meigs	1	200	357,562	15,111	475	547	39,095
Mercer	10	6,036	311,463	3,182	336	.....	24,490
Miami	711½	778,014	418,289	4,210	276½	107½	24,283
Monroe	2,859	2,644,408	444,570	414,993	644½	.....	53,294
Montgomery	8,150	10,892,487	532,124	750	394	.....	35,984

Amount of Tobacco, Butter, Cheese and Sorghum produced in Ohio—Con.

COUNTIES.	TOBACCO.		BUTTER.	CHEESE.	SORGHUM.		
	Acres planted.	Pounds produced.	No. Pounds.	No. pounds.	No. acres.	No. pounds sugar.	No. gallons syrup.
Morgan	568½	500,217	478,129	4,883	324	20	40,351
Morrow	9	500	640,177	10,101	106	241	7,620
Muskingum	7½	3,220	742,548	435	478	29	44,950
Noble	2,341	2,526,022	482,805	10,766	558	355	52,147
Ottawa	1½	990	177,360	1,749	88	56	5,214
Paulding	4	2,020	132,398	170	196	.....	16,478
Perry	42	38,980	503,510	760	339	134	29,958
Pickaway	2½	170	335,471	3,210	141½	38	13,403
Pike	47	27,433	163,559	442	380	.....	27,136
Portage	10½	1,790	907,693	3,308,334	½	1,740	96
Preble	1,692	1,823,235	458,079	740	292	85	31,033
Putnam	5½	3,440	387,551	1,579	275	.....	23,732
Richland	3½	2,550	734,131	18,890	57	37	5,110
Ross	7½	4,466	330,742	6,843	331½	345	22,387
Sandusky	3	2,000	522,511	48,390	153	20	13,144
Scioto	14	4,905	202,015	441	484	284	31,764
Seneca	½	500	733,076	2,490	767	.....	14,206
Shelby	296½	297,159	308,987	355	359	.....	29,653
Stark	10	10,490	966,798	72,981	29	32	1,781
Summit	11½	3,430	785,651	1,283,302	11½	37	545
Trumbull	6	340	880,699	4,161,622	17	339	1,124
Tuscarawas	4½	1,040	712,163	146,203	189½	.....	17,033
Union .....	.....	.....	411,327	20,874	189	.....	17,707
Van Wert	38	36,320	279,883	50,854	249	.....	21,666
Vinton	42	39,224	226,322	575	362	.....	32,668
Warren	1,363	2,004,237	450,564	2,568	561	456	19,308
Washington	1,576	1,417,831	639,981	24,591	728	.....	71,823
Wayne	314	353,320	965,712	148,683	28½	41½	2,691
Williams	8½	5,865	572,694	12,013	149½	.....	13,658
Wood	3	132	612,547	2,372	192	75	19,209
Wyandot	4	1,960	401,306	1,090	86	.....	5,403
Totals	28,862½	36,177,630	44,994,946	32,394,152	23,072½	23,505½	1,817,042

Amount of Maple Sugar made in 1872, Grapes and Wine produced in 1871.

COUNTIES.	MAPLE SUGAR.		GRAPES AND WINE.			
	No. Pounds.	No. gallons Syrup.	Acres planted in the year 1871.	Whole No. of acres in the vineyard.	Pounds of grapes gathered in the year 1871.	Gallons wine pressed in 1871.
Adams	11,008	4,741	.....	50	6,805	5,233
Allen	4,816	872	.....	.....	495	2,837
Ashland	57,583	7,265	4½	53½	176,946	3,499
Ashtabula	181,342	2,746	.....	141	234,500	4,508
Athens	10,777	1,535	5½	113½	5,238	94
Auglaize	2,563	421	.....	4½	2,370	566
Belmont	450	786	65½	1,020½	612,520	26,264
Brown	2,526	2,225	12	368	9,595	2,579
Butler	1,211	8,705	16	37	31,541	7,083
Carroll	1,474	223	4	3	24,270	1,956
Champaign	11,786	5,678	.....	2	12,490	233
Clarke	1,151	548	5	7½	4,490	128
Clermont	745	2,520	68	598	35,506	10,464
Clinton	32,077	8,228	6½	17 34-100	6,455	6½
Columbiana	9,367	4,388	3½	75½	113,150	639
Coshocton	1,206	387	½	23½	18,461	2,375
Crawford	2,281	555	2	3	10,111	1,044
Cuyahoga	42,224	2,046	54½	924	2,529,655	67,544
Darke	6,053	9,840	.....	1½	8,800	678
Defiance	5,583	191	.....	.....	5,365	536
Delaware	23,161	7,126	1	4	12,040	321
Erie	6,185	274	21½	1,722½	4,628,436	281,320
Fairfield	8,028	4,560	20½	181	169,370	13,194
Fayette	356	600	.....	.....	2,150	36
Franklin	2,398	1,940	6	101	14,625	1,625
Fulton	430	39	½	½	4,365	435
Gallia	7,122	959	6½	2	6,000	274
Geauga	310,520	3,302	.....	21	54,500	749
Greene	23,939	6,803	7	1	9,555	105
Guernsey	408	319	15	25	59,010	2,055
Hamilton	293	1,983	94	357	213,461	12,626
Hancock	21,264	2,101	.....	12½	7,992	82
Hardin	12,504	1,389	½	21	7,265	33
Harrison	282	781	1	5	6,167	545
Henry	985	420	.....	½	1,990	461
Highland	11,296	4,185	5	17	3,520	1,086
Hocking	3,319	989	47½	6½	1,720	73
Holmes	2,470	540	13	540	42,660	4,430
Huron	23,819	2,485	16½	13	93,800	2,028
Jackson	533	159	3 1-6	½	1,740	10
Jefferson	231	690	.....	39	36,580	110
Knox	21,796	5,639	14	22	16,350	390
Lake	45,767	1,604	4	109	946,400	4,176
Lawrence	2,039	170	.....	3	155	.....
Licking	11,507	5,493	17½	27 5-6	32,495	3,333
Logan	169,220	8,078	1	20	14,420	154
Lorain	30,290	2,032	16	679	1,551,199	27,028
Lucas	1,030	341	14½	987½	286,797	188,695
Madison	1,000	115	.....	4	600	84
Mahoning	40,069	11,083	2½	17½	43,570	763
Marion	2,625	369	½	½	8,105	53
Medina	87,094	6,893	5 15-16	6 7-24	36,223	410
Meigs	3,594	865	4½	8	2,906	224
Mercer	4,297	471	.....	6	3,995	738

Amount of Maple Sugar made in 1872, Grapes and Wine produced in 1871—Continued.

COUNTIES.	MAPLE SUGAR.		GRAPES AND WINE.			
	No. Pounds.	No. gallons Syrup.	Acres planted in the year 1871.	Whole No. of acres in the vineyard.	Pounds of grapes gathered in the year 1871.	Gallons wine pressed in 1871.
Miami	9,922	8,202	2½	4	9,065	6
Monroe	4,774	527	½	55½	15,225	6,809
Montgomery	15,965	13,741	1	72	252,018	5,971
Morgan	936	497	5	11	20,900	700
Morrow	34,577	6,534	2½	13	29,103	769
Muskingum	541	1,385	10	81½	100,165	5,175
Noble	1,353	317	3½	11½	11,307	1,492
Ottawa	100	59	112½	1,563	5,605,688	245,545
Paulding	1,167	57	.....	.....	2,201	.....
Perry	10,830	4,792	38	103	86,569	4,212
Pickaway	2,497	2,193	3	44	.....	1,538
Pike	10,813	3,232	7½	23½	6,530	1,296
Portage	139,654	24,202	14 1-16	22½	77,056	433
Preble	5,357	6,497	.....	.....	3,905	117
Putnam	3,542	479	.....	½	2,396	52
Richland	26,583	6,792	10½	30½	95,990	298
Ross	11,605	6,621	35½	154½	122,947	6,488
Sandusky	2,951	826	6	42	121,530	8,957
Scioto	2,392	227	.....	54½	3,240	467
Seneca	8,752	1,103	8½	23½	32,842	2,320
Shelby	1,070	865	.....	.....	485	47
Stark	13,025	3,726	1	19	80,373	485
Summit	22,150	2,088	1½	34½	69,770	940
Trumbull	90,162	7,802	.....	11	10,426	.....
Tuscarawas	1,827	669	8	57	68,891	6,301
Union	81,622	4,586	.....	.....	5,525	47
Van Wert	506	90	.....	2	1,535	17
Vinton	8,301	1,231	13½	127	98,322	16,501
Warren	26,085	5,077	19	28	20,300	15,426
Washington	2,935	1,188	11	43	32,521	2,508
Wayne	13,733	2,666	5	58½	35,159	757
Williams	5,496	630	.....	2	10,817	295
Wood	2,255	950	2	113	65,522	3,339
Wyandot	2,314	556	.....	13	25,733	653
Totals	1,632,396	271,113	907	11,219½	19,292,980	1,031,923½

Amount of Sweet Potatoes and number of acres in Orchards and Fruit produced in the State in 1871.

COUNTIES.	SWEET POTATOES.		ORCHARDS.			
	No. acres.	No. bushels.	No. acres.	Apples.	Peaches.	Pears.
				No. bushels.	No. bushels.	No. bushels.
Adams.....	93	3,856	3,635	43,217	19,709	1,022
Allen.....	22	3,335	4,047	167,949	50	77
Ashland.....	10½	614	4,446	276,378	12,617	1,486
Ashtabula.....	.....	33	4,902	111,109	4,331	600
Athens.....	14	1,495	5,225	64,286	10,465	244
Auglaize.....	13½	332	2,442	71,802	21	153
Belmont.....	28	3,342	5,575	84,393	12,111	4,032
Brown.....	119	3,921	3,838	62,498	4,997	1,273
Butler.....	64½	3,399	4,867	116,094	15,441	2,616
Carroll.....	1½	240	4,047	124,558	11,739	480
Champaign.....	14	1,861	3,298	150,923	2,385	1,263
Clarke.....	65½	5,961	3,162	94,017	5,234	1,593
Clermont.....	94	16,438	10,524	156,992	54,618	3,306
Clinton.....	140½	5,472	3,981	60,014	5,631	1,346
Columbiana.....	11½	700	6,902	155,488	15,058	1,309
Coshocton.....	10½	1,089	5,120	154,696	22,181	796
Crawford.....	18	970	4,496	238,758	662	737
Cuyahoga.....	8	934	5,922	153,115	5,626	2,669
Darke.....	69	6,042	4,935	122,816	155	1,398
Defiance.....	61½	753½	2,611	91,535	891	771
Delaware.....	4	237	4,014	50,364	406	325
Erie.....	6½	1,047	3,044	159,851	21,170	1,487
Fairfield.....	59½	5,737	5,367	108,614	23,859	1,309
Fayette.....	13½	1,094	1,150	24,819	2,251	690
Franklin.....	37	2,787	4,819	60,700	3,196	814
Fulton.....	21½	1,653	4,307	210,207	4,550	690
Gallia.....	26½	2,506	4,536	55,534	12,071	2,151
Geauga.....	½	5	4,044	85,934	740	1,207
Greene.....	37	3,091	3,102	74,314	6,922	2,068
Guernsey.....	8	689	4,982	45,171	18,517	599
Hamilton.....	172	11,649	4,862	151,869	13,663	6,829
Hancock.....	23½	1,934	5,283	182,665	3,442	1,253
Hardin.....	48½	367	2,914	96,459	257	637
Harrison.....	4	455	4,143	65,281	17,122	1,695
Heury.....	9	672	2,518	40,101	1,887	10,279
Highland.....	59	5,113	5,018	92,901	33,393	2,088
Mocking.....	24½	2,259	3,676	55,014	21,535	642
Holmes.....	40	1,740	4,570	280,758	20,430	1,970
Huron.....	2	442	6,345½	307,990	8,131	2,592
Jackson.....	11	1,192	3,400	18,706	5,474	55
Jefferson.....	4	513	4,106	86,147	8,497	1,374
Knox.....	13	802	5,242	226,855	13,490	822
Lake.....	½	57	2,421	74,714	5,592	439
Lawrence.....	41	2,072	3,356	55,686	6,609	695
Licking.....	8½	590	6,263	177,422	12,775	1,607
Logan.....	35	2,180	4,110	178,019	469	1,431
Lorain.....	13	1,580	5,743	185,861	8,897	1,534
Lucas.....	10½	519	3,425	90,403	3,806	554
Madison.....	1½	154	2,128	51,447	1,876	706
Mahoning.....	2½	290	4,212	90,283	1,806	2,236
Marion.....	14½	544	4,410	84,181	470	440
Medina.....	1½	195	4,610	202,009	4,537	2,402
Meigs.....	28½	2,687	4,659	84,281	9,055	545

Amount of Sweet Potatoes and acres in Orchards, &c.—Continued.

COUNTIES.	SWEET POTATOES.		ORCHARDS.			
	No. acres.	No. bushels.	No. acres.	Apples.	Peaches.	Pears.
				No. bushels.	No. bushels.	No. bushels.
Mercer	16	835	2,532	51,032	52	220
Miami	34½	2,915	4,121	111,939	390	968
Monroe	3½	464	5,291	171,146	6,759	495
Montgomery	135	13,266	5,507	192,354	7,611	6,460
Morgan	66	6,553	4,146	119,437	21,050	1,849
Morrow	2½	465	5,150	136,882	2,388	581
Maskingum	76	6,320	6,337	91,611	39,795	3,706
Noble	15½	893	4,012	91,501	16,552	780
Ottawa	4½	238	1,383	29,245	2,423	672
Pauiding	4	158	811	12,403	4	43
Perry	24	1,960	4,663	90,675	14,465	1,440
Pickaway	34	2,210	3,042	43,302	8,743	1,048
Pike	9½	704	2,470	15,415	17,026	281
Portage	½	98	5,659	16,651	3,370	1,270
Preble	36	3,696	3,492	141,851	1,780	2,008
Putnam	14	465	2,342	26,696	371	259
Richland	6	648	5,759	368,272	9,409	1,853
Ross	58½	2,237	5,168	42,770	32,829	1,182
Sandusky	10½	1,483	5,217	104,151	29,672	515
Scioto	62½	3,758	3,161	19,820	6,457	153
Seneca	15	1,472	5,947	282,302	2,376	2,555
Shelby	7½	845	2,778	92,260	12	303
Stark	12	1,295	6,500	245,718	5,305	2,580
Summit	1½	160	4,511	168,195	11,865	1,869
Trumbull	4	348	4,891	100,950	2,272	712
Tuscarawas	15	1,476	5,961	199,711	27,148	1,015
Union	2	132	3,262	60,712	158	372
Van Wert	10	367	2,492	11,781	21	109
Vinton	7½	738	2,611	9,182	8,808	160
Warren	200	19,956	6,835	121,346	37,277	3,748
Washington	117	10,738	8,954	268,289	21,735	500
Wayne	9½	1,385	6,503	350,034	11,814	3,833
Williams	15	1,205	4,202	206,351	268	314
Wood	11	276	3,836	49,641	6,787	1,061
Wyandot	15	278	3,347	123,714	2,721	673
Total	2,693½	207,676½	383,647½	10,437,437	860,530	126,982

*Amount of Pasturage, Uncultivated Land, Stone Coal and Pig Iron in Ohio
in 1871.*

COUNTIES.	PASTURAGE.	UNCULTIVATED LAND.	STONE, COAL.	PIG IRON.
	No. acres.	No. acres.	Bushels mined.	Tons manu- factured.
Adams	40,693	74,670	.....	.....
Allen	19,871	71,033	.....	.....
Ashland	46,646	57,023	.....	.....
Ashtabula	118,479	76,910	.....	700
Athens	65,436	86,345	4,391,245	.....
Auglaize	16,567	75,209	.....	.....
Belmont	81,823	70,618	2,919,413	.....
Brown	44,031	62,307	.....	.....
Butler	20,443	40,775	.....	.....
Carroll	65,653	49,456	184,400	.....
Champaign	33,826	50,829	.....	.....
Clarke	46,370	39,960	.....	.....
Clermont	32,989	42,355	.....	.....
Clinton	44,685	52,680	.....	.....
Columbiana	68,336	60,306	6,527,831	17,646
Coshocton	84,472	84,873	278,447	.....
Crawford	31,907	55,977	21,937	.....
Cuyahoga	68,750	46,302	.....	.....
Darke	22,370	93,315	.....	.....
Defiance	11,739	83,870	.....	.....
Delaware	52,178	70,880	.....	.....
Erie	24,203	17,415	.....	.....
Fairfield	53,434	61,728	100	.....
Fayette	32,453	28,151	.....	.....
Franklin	47,458	61,369	80	.....
Fulton	15,309	72,129	.....	.....
Gallia	49,352	78,211	12,000	2,760
Geauga	94,338	44,210	750	.....
Greene	35,693	49,548	.....	.....
Guernsey	96,775	76,663	2,746,080	.....
Hamilton	16,434	21,983	.....	.....
Hancock	34,196	100,804	.....	.....
Hardin	23,935	74,257	50	.....
Harrison	97,651	53,732	461,165	.....
Henry	183	79,291	.....	.....
Highland	65,212	80,860	.....	.....
Hocking	48,088	78,700	1,274,863	.....
Holmes	46,500	65,510	54,160	.....
Huron	62,310	73,961	.....	.....
Jackson	55,380	66,200	1,332,140	28,092
Jefferson	65,865	54,768	2,463,328	.....
Knox	78,413	69,844	.....	.....
Lake	30,654	22,448	.....	.....
Lawrence	15,435	.....	1,655,809	33,649
Licking	121,134	87,405	1,500	.....
Logan	38,800	82,757	.....	.....
Lorain	95,277	44,088	.....	.....
Lucas	9,283	39,524	22	.....
Madison	126,709	72,481	.....	.....
Mahoning	61,356	47,330	648,440	67,630
Marion	51,024	50,327	.....	.....
Medina	65,041	53,652	.....	.....
Meigs	37,221	63,840	5,235,349	.....
Mercer	9,681	88,421	.....	.....
Miami	14,458	42,208	.....	.....
Monroe	53,253	84,873	67,799	.....

Amount of Pasturage, Uncultivated Land, Stone Coal and Pig Iron—Con.

COUNTIES.	PASTURAGE.	UNCULTIVATED LAND.	STONE COAL.	PIG IRON.
	No. acres.	No. acres.	Bushels mined.	Tons manu- factured.
Montgomery.....	28,216	53,504	.....	.....
Morgan.....	63,944	62,598	135,773	.....
Morrow.....	53,016	61,678	.....	.....
Muskingum.....	105,418	89,603	1,070,850	400
Noble.....	67,572	62,281	269,498	.....
Ottawa.....	12,292	39,288	.....	.....
Paulding.....	2,230	50,538	.....	.....
Perry.....	75,895	58,330	3,872,095	.....
Pickaway.....	56,520	49,938	.....	.....
Pike.....	26,957	64,768	.....	.....
Portage.....	102,152	62,021	500,584	.....
Preble.....	37,766	64,594	.....	.....
Punam.....	9,010	18,845	.....	.....
Richland.....	40,325	69,852	.....	.....
Ross.....	76,761	115,466	.....	.....
Sandusky.....	19,769	67,980	90	.....
Scioto.....	16,722	85,412	64,871	9,991
Seneca.....	33,887	74,086	.....	.....
Shelby.....	12,082	70,350	.....	.....
Stark.....	44,456	83,686	9,732,110	.....
Summit.....	58,177	48,458	2,367,077	.....
Trumbull.....	119,800	80,051	3,080,804	.....
Tuscarawas.....	70,883	91,210	1,380,197	5,000
Union.....	52,657	78,793	.....	.....
Van Wert.....	7,706	78,245	.....	.....
Vinton.....	41,712	63,485	497,340	.....
Warren.....	27,845	47,032	.....	.....
Washington.....	65,867	118,831	326,419	.....
Wayne.....	49,487	79,007	1,761,150	.....
Williams.....	17,314	72,343	.....	.....
Wood.....	16,162	97,637	.....	.....
Wyandot.....	39,989	54,640	.....	.....
Totals.....	4,242,391	5,649,131	55,316,666	185,868

Number of Pounds of Wool, number of Dogs, and Sheep Killed in the year 1871.

COUNTIES.	WOOL.	DOGS.	SHEEP KILLED.	
	Pounds shorn.	Total number.	No.	Value.
Adams	37,053	2,028	224	\$461 25
Allen	98,397	1,883	374	1,128 00
Ashland	254,996	1,967	267	943 00
Ashtabula	122,178	1,406	366	1,568 00
Athens	149,290	1,932	344	2,568 00
Auglaize	62,338	2,145	216	598 00
Belmont	579,713	2,726	806	2,954 00
Brown	44,969	2,663	435	1,346 00
Butler	20,744	1,740	289	1,188 00
Carroll	480,532	1,537	403	2,979 00
Champaign	158,999	1,936	349	1,305 00
Clarke	227,928	2,412	590	2,162 00
Clermont	30,210	2,781	372	1,223 00
Clinton	104,618	2,074	580	1,611 00
Columbiana	535,752	2,244	557	2,190 00
Coshocton	440,131	2,514	517	2,119 00
Crawford	220,258	2,502	412	1,169 00
Cuyahoga	95,913	3,899	283	1,069 00
Darke	40,585	3,723	513	1,187 00
Defiance	72,331	1,226	537	525 50
Delaware	357,492	2,097	581	1,769 00
Erie	127,598	710	350	1,575 00
Fairfield	129,323	4,265	585	1,838 00
Fayette	51,368	1,445	184	563 00
Franklin	112,638	3,329	762	3,015 00
Fulton	101,049	1,359	190	532 00
Gallia	46,304	2,704	603	1,288 00
Geauga	62,142	949	121	608 00
Greene	109,613	1,979	398	1,438 00
Guernsey	590,404	2,024	509	2,736 00
Hamilton	8,407	2,066	144	515 00
Hancock	150,726	2,678	456	1,554 00
Hardin	107,795	1,497	592	1,226 00
Harrison	896,136	1,934	335	1,576 00
Henry	38,595	1,573	174	497 00
Highland	52,307	2,812	596	1,607 50
Hocking	86,046	2,465	398	1,142 00
Holmes	190,630	1,755	424	1,418 00
Huron	328,817	1,603	455	1,710 00
Jackson	137,112	2,122	504	1,020 25
Jefferson	612,167	1,579	911	2,769 00
Knox	564,038	2,121	525	1,642 00
Lake	63,246	398	132	447 00
Lawrence	12,771	2,717	418	706 00
Licking	905,228	3,014	819	2,925 00
Logan	146,014	2,229	526	1,744 00
Lorain	203,983	1,712	497	1,586 00
Lucas	34,324	1,169	235	780 00
Madison	286,290	1,364	483	2,724 00
Mahoning	258,643	1,852	304	1,118 00
Marion	256,419	1,812	471	1,692 00
Medina	204,429	1,669	130	562 00
Meigs	46,455	2,341	373	920 00
Mercer	57,190	2,319	442	1,029 00
Miami	32,303	2,121	446	532 00
Monroe	102,915	2,984	556	1,497 00

Number of pounds of Wool, number of Dogs, and Sheep Killed—Continued.

COUNTIES.	WOOL.	DOGS.	SHEEP KILLED.	
	Pounds shorn.	Total number.	No.	Value.
Montgomery.....	12,488	3,639	300	\$1,072 00
Morgan	218,621	2,224	437	1,859 00
Morrow	426,877	1,801	616	2,267 00
Muskingum.....	510,441	2,458	1,047	3,150 50
Noble	191,648	1,990	484	1,495 50
Ottawa	57,074	746	132	298 50
Paulding	17,454	818	193	479 00
Perry	285,358	2,065	613	1,850 50
Pickaway	57,661	3,861	354	1,107 00
Pike	26,280	2,097	254	551 00
Portage	160,850	1,558	210	635 00
Preble.....	30,247	2,374	271	784 00
Putnam	63,632	2,017	316	933 00
Richland	242,787	1,924	857	2,834 00
Ross.....	52,025	2,803	460	1,322 00
Sandusky.....	102,080	1,852	316	1,045 00
Scioto	15,932	2,578	634	1,094 00
Seneca	287,736	2,518	422	1,414 00
Shelby	61,013	2,427	190	564 00
Stark	236,837	3,368	990	2,922 00
Summit	121,834	1,503	252	890 00
Trumbull.....	151,748	1,823	554	2,302 00
Tuscarawas.....	376,479	2,906	1,470	2,671 00
Union	264,269	1,622	504	1,573 00
Van Wert	52,268	1,813	331	844 00
Vinton	66,088	1,250	339	900 00
Warren	44,784	2,027	698	1,463 00
Washington	160,960	3,940	785	2,024 00
Wayne	218,781	....	696	2,610 50
Williams	86,127	1,747	270	803 00
Wood	100,075	2,038	376	1,431 00
Wyandot	291,016	1,131	292	981 50
Totals.....	16,139,331	185,023	39,726	\$126,874 50

Sheep injured by Dogs, etc., Bonds, etc., exempt from taxation, in 1871.

COUNTIES.	SHEEP INJURED.		Aggregate amount of injury to sheep by dogs.	Bonds, etc., exempt from taxation.
	No.	Estimate of injury done.		
Adams	43	\$74 00	\$535 25	\$70,973 00
Allen	300	245 00	1,373 00	16,073 00
Ashland	182	396 00	1,339 00	97,246 00
Ashtabula	245	554 00	2,122 00	137,310 00
Athens	141	310 00	2,878 00	88,531 00
Auglaize	159	277 00	875 00	14,504 00
Belmont	493	1,449 50	4,403 50	153,391 00
Brown	113	246 00	1,592 00	117,154 00
Butler	66	148 00	1,336 00	138,238 00
Carroll	167	380 00	3,359 00	79,052 00
Champaign	417	1,280 00	2,585 00	37,837 00
Clarke	403	956 00	3,118 00	336,306 00
Clermont	171	384 00	1,607 00	116,287 00
Clinton	605	1,142 00	2,763 00	159,743 00
Columbiana	382	1,126 00	3,316 00	85,271 00
Coshocton	267	517 00	2,636 00	77,381 00
Crawford	546	1,065 00	2,234 00	76,476 00
Cuyahoga	180	343 00	1,411 00	109,390 00
Darke	291	285 00	1,472 00	11,410 00
Defiance	141	340 00	847 50	14,478 00
Delaware	1,931	1,151 00	2,919 00	157,095 00
Erie	420	610 00	2,185 00	92,680 00
Fairfield	415	1,072 00	2,960 00	113,589 00
Fayette	69	113 00	676 00	4,834 00
Franklin	245	348 00	3,363 00	129,606 00
Fulton	60	144 00	676 00	11,128 00
Gallia	120	170 00	1,458 00	119,433 00
Geauga	71	206 00	814 00	82,076 00
Greene	355	466 00	1,904 00	226,665 00
Guernsey	768	2,463 00	5,199 00	102,390 00
Hamilton	48	96 00	620 00	1,615,270 00
Hancock	374	550 00	2,104 00	43,282 00
Hardin	252	699 00	1,925 00	17,480 00
Harrison	356	912 00	2,488 00	104,375 00
Henry	117	136 00	633 00	8,889 00
Highland	186	285 00	1,892 50	118,063 00
Hocking	165	402 00	1,544 00	46,246 00
Holmes	168	428 00	1,846 00	37,670 00
Huron	319	735 00	2,445 00	161,927 00
Jackson	119	132 50	1,152 75	178,383 00
Jefferson	535	2,100 00	4,869 00	124,065 00
Knox	528	1,114 50	2,756 50	74,764 00
Lake	63	179 00	626 00	309,700 00
Lawrence	25	37 00	743 00	.....
Licking	930	2,100 00	5,085 00	87,540 00
Logan	344	1,064 00	2,808 00	31,007 00
Lorain	436	655 00	2,241 00	66,985 00
Lucas	96	242 00	1,022 00	16,000 00
Madison	1,018	813 00	3,866 00	21,154 00
Mahoning	268	674 00	1,792 00	136,726 00
Marion	306	508 00	2,200 00	45,546 00
Medina	112	326 00	888 00	66,566 00
Meigs	76	145 00	1,065 00	86,117 00
Mercer	51	86 00	1,115 00	28,507 00
Miami	136	261 00	2,343 00	75,713 00
Monroe	95	188 00	1,685 00	126,384 00

Sheep injured by Dogs, etc., Bonds, etc., exempt from taxation, in 1871—Con.

COUNTIES.	SHEEP INJURED.		Aggregate amount of injury to sheep by dogs.	Bonds, etc., exempt from taxation.
	No.	Estimate of injury done.		
Montgomery	79	\$126 00	\$1,151 00	\$195,424 00
Morgan	547	707 00	2,566 00	60,109 00
Morrow	391	1,145 00	3,412 00	29,480 00
Muskingum	1,160	1,349 00	4,499 50	270,197 00
Noble	225	355 00	1,850 50	114,380 00
Ottawa	42	76 00	374 50	16,280 00
Paulding	39	44 25	523 25	12,900 00
Perry	355	1,164 00	3,014 50	86,151 00
Pickaway	182	423 00	1,530 00	70,288 00
Pike	45	44 00	595 00	29,273 00
Portage	148	325 00	960 00	113,255 00
Preble	203	114 00	864 00	40,438 00
Putnam	73	715 00	1,048 00	34,878 00
Richland	589	1,094 00	3,844 00	117,751 00
Ross	79	163 00	1,485 00	106,469 00
Sandusky	15	194 00	1,239 00	20,495 00
Scioto	65	110 75	1,204 75	96,626 00
Seneca	332	755 00	2,169 00	79,802 00
Shelby	76	111 00	675 00	16,070 00
Stark	746	1,389 00	4,311 00	126,050 00
Summit	180	474 00	1,463 00	62,297 00
Trumbull	397	724 00	3,026 00	256,070 00
Tuscarawas	1,154	1,607 00	4,278 00	46,466 00
Union	198	403 00	1,976 00	15,092 00
Van Wert	73	120 00	964 00	11,644 00
Vinton	89	164 00	1,064 00	22,657 00
Warren	193	816 00	2,279 00	276,166 00
Washington	602	457 00	2,481 00	243,853 00
Wayne	474	997 50	3,608 00	243,261 00
Williams	170	277 00	1,080 00	8,660 00
Wood	163	371 00	1,802 00	15,819 00
Wyandot	217	700 50	1,682 00	35,940 00
Totals	26,245	\$51,043 50	\$177,918 00	\$9,378,747 00

REPORT TO THE HOUSE OF REPRESENTATIVES ON THE COLORADO BEETLE.

BY HON. DAVID C. RICHMOND.

Mr. Richmond submitted the following report of the select committee of one to whom was referred House Resolution No. —, which resolution is in the following language, viz:

Resolved, That a select committee of one be appointed to inquire, and report to this House whether any practical measure is known which can be employed for the destruction of the Colorado Potato Beetle; and if such measure is known, to report what it is. Also to report any information concerning the same which the committee may deem important and of public interest.

The committee having had the above resolution under consideration, submits the following report:

Almost all the insects destructive to crops are found in the countries where such crops are grown. Nearly all of our cultivated crops, except corn and tobacco, have an Eastern or European origin, and hence nearly all the destructive insects have been imported from these countries. This is true of the Hessian fly, wheat midge, peach and apple tree borers, curculio and other insects. But the Colorado Potato Beetle is a native of our western mountains, as its common name indicates. It was known to the entomologist Say fully fifty years ago, who gave it the name of *Doryphora decem-lineata*, or ten-lined beetle. At the time of discovery it existed in very limited numbers on a wild plant growing in Colorado, but somewhat resembling our potato vines.

During the past ten years this insect has traveled eastward at the rate of about sixty miles per annum, and constantly increasing in numbers. From reports collected during 1871 it appears that this beetle was found in every county in this State. The indications at present are that the entire country to the Atlantic will be overrun by them; and judging by what is now known of their nature and habits, they in all probability will find their way across the Atlantic. It is not probable that in the cool, moist climate of Great Britain much damage will be done by them; but in central and southern Europe, unless checked, their ravages will be immense.

There is this consolation, however, that in case it reaches Europe there is no government there, however despotic, that will not at once send out commissions to learn all about it and destroy it. It is because these governments take a direct interest in the productive industries of these countries that they escape the fearful ravages of the myriads of destructive insects to which we are subjected. It is true that we have agricultural and horticultural societies, composed of capable and energetic men; but these societies have no means at their command for the investigation of subjects of this kind.

It is certainly a matter greatly to be regretted, and at the same time is a great misfortune to our agricultural interests, that neither the general, nor our own State Government feel a sufficient interest in this and kindred subjects, so as to take efficient steps

for effectual relief from the destruction of crops by insects, and more especially the destruction of the potato crop by the beetle under consideration. I am well aware that it will be no easy task to secure the complete extermination of this insect; that it may involve considerable expense, concert of action throughout the State rigidly enforced by order of the government; but in a given number of years the people and government both would be the gainers by such a course, because it would guarantee the fullness of the potato crop, at least so far as ravages from this insect are concerned.

The damage already done by this insect in the Northwestern States is estimated in round numbers at more than ten millions of dollars. The loss already incurred by Ohio is estimated at one million of dollars. If we are to predict the future by what we know of the past, then, taking the experience of States lying west of us as our basis of an estimate, we are fully justified in predicting that the loss to Ohio the coming season will not be less than fully a million of dollars.

The potato has become an indispensable article of food, and is to be found on the tables of all classes—from the millionaire down to the beggar—from that of the most learned, to the most ignorant. But the quality of this esculent varies greatly even under ordinary circumstances. Even when grown and matured under the most favorable circumstances, if left exposed to the sun's direct rays during several days the tuber becomes a deadly poison, and is consequently unfit for food. Its foliage is very tender, and is very susceptible to atmospheric changes, and requires a strong and healthy foliage to bring the tuber to perfection and make it a fit and healthy article of food.

The inevitable consequence of the destruction of the leaves by the larvæ of the Colorado Potato Beetle is the arrest of the growth of the tuber; and this arrest before the tuber has perfected its growth prevents it from ever becoming perfectly or normally mature. Hence, in perfect ignorance as to consequences, a large amount of immature potatoes which are entirely unfit for food are thrown upon the market, and all classes of citizens, whether of the city or country, suffer in consequence, because it would be an exceedingly difficult task to select and reject all the immature tubers by simple ocular inspection.

WHAT WE KNOW OF THE COLORADO POTATO BEETLE.

At the first plowing in the spring of the ground which the preceding year had been in potatoes the perfect Colorado Potato Beetle will be found in greater or lesser numbers, according to the abundance of them the year previous. These perfect beetles do not eat the foliage of the potato plant—in fact, some close observers assert that they do not eat anything whatever—but the female deposits in a mass about fifty eggs, of an orange color, on the under side of the potato leaf (and on the under side of a lettuce leaf as well). These eggs when taken into the human stomach act as a poison. During her existence the female beetle deposits an aggregate of about seven hundred eggs. The eggs are never deposited on a leaf which is constantly in the shade, from which it is inferred that the direct rays of the sun are necessary to hatch them.

In the early part of June of last year, when the potato tops on my farm were about 10 inches high, the beetle commenced laying eggs on them. In the course of six to eight days—depending somewhat upon the weather—these eggs were hatched and the larvæ, as the young are called, ate their way through the leaf and were found on the top of the leaf. They are, at this stage, most voracious devourers of the leaves, and increase in size during 14 to 18 days; when they drop down on the ground, and penetrate the ground sufficiently to be fully concealed, where in 7 to 8 days they undergo their metamorphosis, and emerge from their hiding-place, a perfect beetle, and in the course of 8 or

10 days they commence depositing their eggs. There are three complete generations, or crops, of these beetles every season, so that the ultimate progeny at the close of the season, from the first female that deposited eggs in the spring, amounts to the enormous number of more than *fifty-eight millions!*

The brood which appears after the first of September does not appear to be so voracious as the preceding ones. When they have attained their full size as larvæ they drop from the vines, penetrate into the soil, undergo their metamorphosis, and remain in the ground until early spring. They appeared on the surface of the ground as early as the 25th of last March, west of Columbus. Some larvæ are found on the vines as late as the early autumn frosts.

Fall plowing does not destroy the beetles. When potatoes are dug and placed in small heaps in the field in the spring, if the beetles are abundant they will collect in numbers about the potatoes and may be readily caught and destroyed. Notwithstanding these insects have wings they seldom employ them to escape, but when disturbed on the vines will at once drop to the ground. But they fly great distances, mostly during the night. In the morning great numbers of them are often found on the sails and rigging of vessels on the western portion of Lake Erie. The stakes of the fish-ponds in the lake are often literally covered with them. They are not easily drowned because when driven into the water by strong winds and then driven on shore again, they do not appear to have suffered in any respect. They appear more tenacious of life than ordinary beetles.

The few which are seen in any given region of country during the first year seldom attract much attention, and as I have learned by experience in travelling in various portions of our own, and some of the western States, people generally do not understand the nature of these beetles, and take no pains to destroy them at first. The second or third year after their appearance they generally are sufficiently numerous to destroy the entire crop of potatoes. It is true that there is an insect enemy of this beetle, but it is very doubtful whether we can rely upon this enemy to destroy the beetle, and so relieve us from the destruction of the potato crop. The western States having the most experience with this beetle find that it annually does greater or less injury to the crop, according to circumstances; but as a rule the careless cultivators suffer most. Entomologists have warned us that if this insect is not checked that it will destroy the entire potato crop during a series of years, at least, in which it is found; at all events these predictions have been verified in the West. I feel very certain that concerted action on the part of potato-growers in a section of country, or in fact in an entire county, would be a certain means of preventing their ravages. Last year these beetles were very numerous in Erie county, yet all the potato-growers who gave the matter proper attention saved their crops, whilst those who gave it no attention lost their entire crops.

I am a practical farmer, of Erie county, and will give you my own experience, which last year was a success. In August, 1870, Jno. H. Klippart was making an agricultural survey of Erie county, and at that time he pointed out the Colorado beetle to me in our own county. I do not suppose that a single person in the county had any idea that these insects were in our midst. I did not wish to believe that they were in the county, and told him that the few we had would not amount to anything. But he replied that the next year only we would learn what great destroyers they really were. We have a large farmers' club in the county, and in the call for the September meeting I gave notice to the members to obtain all the information possible, and communicate it at the meeting. Some specimens of the beetle were on exhibition, whilst from the reports of the members

it appeared that these insects then were in nearly every township in the county, in small numbers, and therefore had not attracted much attention.

The next year, they made their appearance in great numbers, before we supposed it time for them to make their appearance. On the 10th of June, we commenced picking or brushing them by hand into a tin pan, and placing them between two paddles and rubbing them to death, and at the same time killing the larvæ and destroying the eggs. On my farm, they were mostly confined to a *three* acre lot of Early Rose, on sandy land. In consequence of the warfare made on them, they did very little damage. I dug the Early Rose the first of August, and had 200 bushels per acre; but I am fully satisfied that if I had neglected them, that I would have lost that crop. After the Early Rose were dug, these insects attacked a field of late potatoes; but I treated them in the same manner, and so saved the crop. In a five acre field, on the east side of a forest where no potatoes were grown the previous year, the crop was almost uninjured. Fields situated like this, will generally be found less injured than others.

On the 25th of June, many of the larvæ were nearly matured, and some new beetles were on the vines. On the 10th of July, many of the new crop of beetles on the vines were fully matured.

I never made any use of Paris green, which is so highly recommended as a specific, and I do not think it necessary to employ it, provided the entire community will unite and do their duty in exterminating these beetles. My objections to the use of Paris green are, that in the first place it is too expensive, and in the second place, it is equally the inevitable destroyer of our insect friends as it is of the beetle itself. But when it is decided to use Paris green—which is a rank poison—mix *one* pound of it with 20 pounds of good fine flour, and let the mixer be careful not to inhale any of the dust arising from it. Then put the mixture in a sprinkler having a long handle attached to it, and apply early in the morning while the dew is yet on the vines. The flour absorbing the dew, forms a paste on the leaf which is voraciously eaten by the larvæ, and is certain death to it, without any fear of danger to the vines or tubers from the Paris green itself.

In the West, there has been no concert of action for the destruction of this insect; and the result has been that when one field was devoured, the insects would fly to the next in great numbers and devour it, and so on from field to field, and the potato-grower was obliged to abandon the pursuit in despair. Now, as these mature beetles do not eat anything themselves, they must hatch a brood or crop before any damage can ensue; when this brood is hatched, then is the time to apply the Paris green.

I spent considerable time and money last summer in traveling for the sake of acquiring information upon this and other subjects. I visited the meeting of the Richmond Horticultural Society, at Richmond, Indiana, and there came in contact with a large number of citizens of that State. I visited Michigan, and various portions of our own State, where this insect had found its way. What I learned during these travels, added to my own experience, enabled me to communicate some very practical information to our farmers' club, and the members to the potato growers of the county, and thus aided very much in saving the last year's crop from the beetle's ravages.

The potato crop is one of the most valuable tillage crops grown in some of the townships in our county. It is extensively grown in the warm sandy soil of the northern section of our State, and is a very profitable crop. My profits on last year's crop was one hundred dollars per acre for the entire crop. This crop is therefore worth looking after, and is after all not so small a business as some may suppose.

It is important that the public should know something about our insect friends, or insect enemies of this potato beetle. I am no entomologist, and can only say that I

know the common "lady bug" is a great and persistent enemy of the Colorado bug. The lady bug is a small round bug with black spots on its wings, and seems to multiply very rapidly when the Colorado bug or potato beetle is about, eating the eggs of the latter by the thousand. It is possible that in the course of two or three years the lady bug may keep the numbers greatly in check, if not completely subdue them.

The so-called *soldier bug* is a brown bug, and has attracted attention only since the appearance of the Colorado bug. It is about the size and has the appearance of the common black stink bug, so common on squash vines during the summer. This soldier bug thrusts his spear or proboscis into the soft body of the larvæ of the beetle and sucks the contents, thus killing it.

There is also a steel-blue winged insect of the wasp family which destroys these larvæ.

The above enumerated are the principal or chief insect enemies of the potato beetle—there are several others, but of less importance. It is very important that potato growers should know their insect friends, and be careful not to destroy them, which is often done when they are destroying the beetle itself.

In conclusion, I beg leave to say that I am a practical working farmer, and have, by permission of this House, written out this report entirely free from scientific terms, and have endeavored to put my ideas in the plainest possible language, so as to be understood by all, and which I hope and trust may be of some benefit to the farmers of Ohio.

SANDUSKY, August 12, 1872.

My experience has convinced me that while the Colorado potato beetle can be controlled the first two years by knocking them off by hand, the third year they became so numerous on my farm that I had to resort to Paris Green. In fact I am satisfied, at any time when they become numerous, Paris Green is the cheapest and best method we have for their destruction. No injury will result from its use in the following manner:

A tablespoonful of good Paris Green to a pailful of water, sprinkled on the vines, will effectually kill them within three days. It should be put on the vines in dry weather, when the sun shines, with a short-handle broom or a fine-sprinkling water pot.

Another good remedy is to mix what the millers call fine middlings, worth about two cents per pound, in the proportion of forty pounds to one of Paris Green. Put on the vines with a long-handle tin sprinkler or gunny bag. Give the vines a good sprinkling morning or evening when the dew is on. Keep to the windward during the application.

This year we have the bugs by the million. They are not doing us much damage, however, because most farmers are keeping them in check, which is easily done if proper attention is given them in time; otherwise they would destroy the entire crop of this county.

REPORT ON SOAB IN SHEEP.*

BY HUGH BORTHWICK, SHEPHERD, MIDDLESTEAD, SELKIRK.

Among the diseases of the skin British sheep, especially Scotch, are subject to, the scab stands predominant in frequency of occurrence, deterioration to the wool, the flesh and the thriving of the animal, and if allowed to gain to a footing amongst a flock of sheep, and means are not taken to arrest its progress, there is no disease sheep are subject to that spreads with so ruinous effect, both to the flock and flock-master. It attacks young and old, from the suckling lamb of fourteen days to the aged dam of six years old. Its ravages are as severely felt amongst the hardy black-faced breed of the Highlands, as among the more tenderly constituted breed of the Lowlands; in fact, there is no variety of breed, age or condition of sheep able to repel its attacks. If it has fairly gained a footing amongst a hirsle, the contagion is communicated in a more or less degree, according as sheep come in contact with each other. Thus the disease spreads more rapidly amongst a flock of sheep grazing in parks than on the wild and mountainous ranges. Scab in sheep is something akin to itch in the human being; and amongst flock-masters of experience and good management, it is looked upon with the same abhorrence in the sheep as a family of human beings affected with this disease are viewed by every individual they come in contact with. Itch in the human family that has existed for any length of time is denounced by the highest medical authority as the result of ignorance, indolence or sloth, and the acute practical stockman does not hesitate to apply the same reprehensible language to his neighbor who allows his stock to be overrun with scab. These are strong assertions, but they are no less strong than true. There is no doubt scab may, and does occasionally, break out amongst the best managed flocks, but it is always imported, or the result of having come in contact with diseased animals; but I have never known it to spread to any extent if the proper cure is applied with alacrity, which I will afterward endeavor to prove.

The symptoms are easily recognized. In the first stage of the disease, a sheep is observed to bite or pull with its teeth a few fibres from the wool. Consequently a spot of a whiter hue is observed than the general color of the coat, and is commonly termed "flowering" by shepherds. As the disease advances the animal becomes very irritable and uneasy, rubbing itself against every projecting part of a dyke, post or earthen bank that comes in its way, and tearing off the wool with its teeth from every diseased part of the body it can lay hold on. By degrees the skin becomes hard, large patches of scab are formed, and the wool comes off in considerable flakes; the animal loses condition rapidly; no amount of liberal feeding will sustain it. On the contrary, it has rather a tendency to aggravate the disease, and sooner or later the animal falls a prey to the tormenting disorder, a distressing spectacle of the negligence and inhumanity of the owner. If sheep are first attacked with a scab on part of the body where neither its mouth nor feet can reach, the symptoms may for a time pass unobserved; but generally an uneasiness will be recognized before the disease spreads to any extent. No definite period can be stated how long a sheep will sustain life under the disease. A good deal depends upon the con-

* From the Transactions of the Highland and Agricultural Society of Scotland.

stitution and condition of the animal when attacked; also upon the period and state of the season, at least upon hill pasture. For example, if a sheep is affected with scab in the end of the year and means are taken to cure it, if the winter is stormy it runs a great risk of dying of poverty in the spring. A strong proof of this fact came under my own knowledge in the severe winter and spring of 1860 and 1861, in the county of Mid-Lothian, where a hirsell of sheep, numbering 400 and 500, had been affected with scab for some years previous, no effectual means having been taken to eradicate the disorder, and by the month of May, 1861, only about forty remained alive.

It is asserted by some writers of high authority, that scab assumes different forms in different seasons; the only forms of the disease in the south of Scotland that have come under my own observation have all a striking resemblance. When the animal is examined in the first stage of the disease, where it has been scratching or biting off the wool with his teeth, small red pustules or pimples are observed, the skin feels hard to the touch, and if scratched with the fingers or any instrument the animal exhibits a remarkable uneasiness, chacking with its teeth, and will even seize the operator and bite severely; and at no time, either in health or laboring under any other disorder, will a sheep attempt to bite a human being except when suffering from scab. By degrees the pimples spread over the body, the skin becomes rough and hard, an extensive eruption ensues, large patches of crust or scab are formed, which increases over the body, and ultimately the animal becomes exhausted from continual suffering or dies of poverty by the perpetual irritation. I have never had any experience in the *post-mortem* examination of scabbed sheep, consequently can give no minute account of the appearances from my own observation; and, as I have already hinted, there ought to be no deaths of sheep from scab, as it yields readily to treatment, and a *post-mortem* examination is either the result of ignorance or negligence, or allowed to take place to derive information.

Youatt describes the appearances as very uncertain and inconclusive. He says there is generally chronic inflammation of the intestines, with the presence of a great number of worms; the liver is occasionally schirrous, and the spleen enlarged; and there are frequently serious effusions in the belly, and sometimes in the chest. There has been evident sympathy between the digestive and cutaneous systems. Several of these appearances, however, are observed in ill-nursed lambs and old sheep dying of poverty, although free of scab. In the former, the intestines are often invaded with worms to a great extent, and water is found both in the belly and chest; whereas, in old sheep dying of poverty, water is very often in the chest. I once slaughtered a strayed sheep affected with scab, to prevent the disease from spreading amongst the flock I had charge of, and found no trace of disease internally; all the organs were apparently healthy; the animal affected, however, was in the first stage of the disorder.

It is clearly ascertained by scientific men that the scab in sheep, like the itch in the human being, is connected with and propagated by certain minute insects belonging to the class of acari, which inhabit pimples or pustules. But the question naturally arises, how came they first into existence? This problem is very difficult of solution, and puzzles the most eminent physiologists. But, as I have already said, I have never known it to break out spontaneously amongst a flock of sheep properly managed, during a period of thirty years experience as a shepherd in pastoral districts. This fact alone, I think, is conclusive proof that its origin must be sought for in mismanagement. To show what kind of mismanagement is most liable to produce the disease, I will quote the authority of my late employer, Mr. Gardner, who was at one time and for many years a large flockmaster in Australia, where the disease prevailed to a great extent. Amongst settlers in Australia, the idea was common that when the sheep were heated by being

overrun with dogs, and being huddled close together into folds all night, as was the custom in the colony, the heating and over-crowding combined with the fold at times getting foul or dirty, had a great influence in producing the disease in that warm country.

Mr. Gardner, however, states from his own experience that he generally could trace scab amongst his own flock to have been communicated from buying sheep affected with scab, or having come in contact with some neighboring flocks so affected. Nevertheless it is quite evident that over-heating or over-crowding in fields, especially the latter, has a tendency to bring on disease of the skin. A strong proof of this fact came under my observation on several occasions. It was the practice on the farm of Traquair Knowe, for several years, to draw from the stock a few of the worst conditioned and unthriving sheep in the month of October, amounting from ten to twenty in number. They were generally confined in a small inclosure, well sheltered, and fed off for the butcher on cat turnips, corn and hay. They were allowed to remain white, that is, no dipping or smearing was had recourse to, and in the beginning of the spring of each year, an unusual eruption broke out on the skin, and although it could not be termed scab, still the wool began to fall off, and there was a certain irritation or itch about the skin which prevented the sheep from feeding, and they had always to be sold off in the course of three or four months after the feeding begun. It may be argued that the want of dipping or smearing was the cause of the eruption on the skin. This, however, was not the case, for amongst the rest of the feeding sheep, also undipped or unsmeared, varying in number from five to twelve score, inclosed in a turnip field and fed in the same manner, nothing of the kind ever appeared on the skin although fed for a longer period. Thus I think it is clear that confining sheep too close is injurious to the health, and has a tendency to bring on disease of the skin, and may, if persisted in for any length of time, combined with other causes of mismanagement, produce scab, and in this respect it only follows the laws by which other diseases are governed, and are produced in a great measure by neglect or mismanagement. For example, sturdiness in sheep the hydatid in the brain of sheep, is a parasitical insect propagated in a great measure through improper nourishment and shelter of the animal. Mr. Gardner states that moist, showery weather had a great influence in spreading the disease. When the weather had been dry for a long time only slight symptoms were visible amongst the flocks, but when it changed into soft and frequent showers, the disease spread with alarming rapidity. This fact is easily explained. If the acari are newly hatched and kept dry, they die in a few days and crumble into dust; the same fact may also be recognized in the maggot. If the fly deposits its eggs on the wool in very dry weather a great many perish; but if the atmosphere is soft and warm, they spring into life with amazing rapidity, and multiply exceedingly. As I have already said, I have never seen scab arise spontaneously; it was always communicated from sheep to sheep by the coming in contact of the sound animal with the diseased.

The following are a few of the examples that have come under my own observation: In the back end of the year a sheep having strayed from a drove that had been bought at Falkirk, and after passing through a great many stock-farms, took up its abode on one of the farms in the high pastoral districts of Peeblesshire, and although it had been often observed by the shepherds, no particular attention was paid to it, as it is an event of frequent occurrence. In the course of a few weeks the animal was observed to be drawing the wool off with its teeth, and when it was caught and examined, the body was found to be affected with scab to a considerable extent. The sheep was instantly destroyed, as the owner was not known. But in the course of six weeks several of the

sheep belonging to the hirsell where the diseased sheep had taken up its abode, showed symptoms of disease. They were instantly taken home and dressed. Also, every sheep belonging to the cut or lot that grazed together, and it was considered that effectual means had been taken both as to the cure and the preventative. But in the spring of the year the disease broke out anew amongst several of the cuts or lots of the sheep in the hirsell, and, after several unsuccessful attempts, the disease could only be eradicated by dressing the whole flock, both sound and diseased.

Buying in diseased rams is often a fruitful cause of spreading the disease; and as the insect at a certain stage remains dormant, and baffles the most acute eye to detect its presence, still it retains life from autumn to spring. A circumstance which shows that the most practical stockman may purchase scabbed sheep unawares, of which the following is a proof:

A farmer in Peeblesshire bought four Cheviot rams in the month of September, and being brought home, rumors were widespread that scab had been prevalent amongst the stock from which they had been bred. This led to the rams being minutely examined, and no trace of scab could be recognized. They were put to serve hill ewes in the month of November, after passing another careful examination, and passed as sound. But in the course of a month, two of them showed symptoms of scab, and upon examination, it was found the disease had clearly manifested itself. The four rams were immediately taken in and dressed; but in the month of January several of the ewes were affected. The whole hirsell was subjected to a minute examination, and although a very few were slightly infected, the whole were dressed, and the disease at once disappeared. This shows the great importance of applying a cure as soon as the disease is observed, and of dressing every sheep that may have had an opportunity of coming in contact with the diseased ones. To illustrate this fact, I may relate the following which occurred on a stock-farm not far distant from the last mentioned, and where scab was communicated to the ewe from buying in diseased rams, and where, also, no disease could be traced on the animals at the time of purchase. They were put to serve the ewes at Martinmas, and were brought in at the New-Year, and put on liberal feeding, and in the course of a few weeks the disease manifested itself. Scab broke out among the ewes by the middle of February, and those that could be recognized by sight or showed symptoms of disease only were dressed. The cure, or rather what may be termed no cure at all, was continued in this half measure for a year, till not only the whole hirsell had become effected, but the disease was communicated to the flock of three adjacent farms. In this case, had not a strict inquiry been made, the disease might have been said to have arisen spontaneously. This, however, was not the case, for it was clearly proven that scab had existed amongst the flock from which the rams had been bought, and at the time of sale the sheep was not thoroughly cured.

Various and conflicting opinions exist as to what extent the disease is infectious. Some affirm that it requires sheep to come in contact with the diseased before it can be communicated; whilst others maintain that the disease is propagated by the mere travelling on a road, such as a public drove-road, from large markets or fairs. I, however, do not think the disease so catching as the latter advocates affirm. For example, I have acted as shepherd for sixteen years on various farms, where the drove-road from Falkirk to the south passes through the sheep pasture, and every year some of the lots of sheep were more or less affected with scab, and during all that period not a single sheep of which I had charge caught the disease. Strict measures were always taken to prevent intermixing, but the sheep were always daily passing along and crossing and recrossing the road through which the scabbed droves were driven.

A stronger proof than this, that scab is not so catching as some affirm, may be deduced from a neighboring farm, where the drove-road from Falkirk not only passes through the sheep pasture, but it is what is termed a stage from the market to the south, that is part of the regular sheep pasture is usually let for sheep and cattle to stay all night on, and not a single sheep on the farm was ever known to catch the disease. The ground set apart for letting to droves is very high and exposed, and is free of dykes or rubbing-posts, and is eaten bare, and rendered foul by the droves; and, consequently, no inducement is left for the sheep on the farm to pasture on that particular space for a time. Nevertheless, they are daily crossing and recrossing, which, we think, is sufficient proof that the disease is not so catching as some affirm, and that it requires sheep to come in contact with the diseased animals, or a longer period of time than a single night for the acari to be deposited on the pasture or any projecting substance, so that it may be communicated to sound animals. I think this fact illustrates a very important point, regarding which a great discussion has arisen of late in the cattle disease prevention bill, namely, to what extent scabbed sheep ought to be allowed to travel publicly; and I think it will appear quite clear that if scabbed sheep are driven straight on the public road, without coming in contact with sound animals, there is no danger of the disease being communicated; and it is a fact yearly experienced among dealers and drovers, when buying sheep in the Highlands to bring south, that although no scab can be detected among them at the time they are lifted, still after a drive of several weeks, before they get to their destination, the disease frequently breaks out; and I have never heard the origin of the disease attributed to the driving, but the irritation, and sometimes over-heating, only tends to rouse into action the latent germs of the disorder which manifests itself more early than if the sheep were allowed to graze at their own leisure. Then, in these cases, if a lot of sheep were stopped on their road homeward, a case of great hardship and difficulty would occur, which the most acute dealer could not avert nor foresee, and the danger of spreading the disease would be increased tenfold more by the lot being stopped at some station than if they were allowed to pass straight on.

There is no doubt that railway traveling is a very different question and a very fruitful source of spreading the disease. For example, if a lot of scabbed sheep were placed in a truck and conveyed for several hours, and, when taken out, if a lot of sound ones were put immediately in, which sometimes occurs, great risk is run of catching the disorder. To illustrate this point, I will relate the following fact: On a farm in Mid-Lothian, already alluded to, where the disease prevailed to such an extent, no fences or march dykes existed between it and several of the adjoining stock farms, and from the shepherds paying particular attention in keeping the sheep from intermixing, the disease for some years never spread to any extent. Still, there was always a few catching the disorder. To obviate this, and the constant care and trouble of the shepherds, one of the adjoining tenants put a paling along the boundary, on the top of the hill, between his sheep and the farm, where scab prevailed. Instead, however, of the fence having the desired effect, it was exactly the opposite, and the disease spread and increased to a far greater extent. The reason is plain, and can be easily explained. Sheep naturally draw to a hill top at night if the weather is mild. Consequently the paling served as rubbing-post, where the diseased sheep naturally drew, to ease their torture, and on which the acari must have been plentifully deposited. Consequently the sound sheep on the other side were attracted by their neighbors, and not only carried off the acari, but the wool of each came in contact through the bars of the paling, so that the disease was transferred from sheep to sheep. Thus, in a similar manner, scabbed sheep conveyed by the railway is a more fruitful source of infection than traveling on open road.

Cure of scab undoubtedly lies in the destruction of the insect, but the important question is: What is the best composition or infusion for that purpose? The remedies that are commonly applied are numerous, but the most effectual, with the least danger of injuring the animal, that ever I have seen applied, is the common spirit of tar, and, if properly applied, will penetrate and destroy the insect concealed in the pustules, or buried beneath the skin. The quantity applied may vary according to the condition and age of the sheep, but for hill or ordinary breeding stock one bottle of the spirits of tar mixed with twelve times the quantity of water is sufficient for twelve sheep, or one common glass of the spirit of tar mixed with a bottle of water is sufficient for one. But if a large number of sheep required to be dressed, a quantity of liquid, or as much as will dress a hundred sheep, may be mixed at a time. If mixing for a hundred, six gallons of water, with six pounds of common soda, ought to be warmed to the boiling pitch; then add the spirit of tar. The soda acts as a chemical substance to combine and thoroughly mix the spirit of tar with the water. Without it the spirit of tar will not intermix with water. Afterwards fill up the mixture with cold water to the quantity required. The operation ought then to be conducted in the usual way of pouring, but with a great deal more of time, care and attention. The shepherds sheds the wool, and a boy or girl, with a small tin dish, in the form of a coffee or tea pot, but a great deal smaller at the outlet, measures out the exact quantity for each sheep, and pours out the liquid slowly, following up the furrow behind the shepherd's hands. The sheds ought not to be above one inch apart, so that the skin of the animal may be thoroughly examined, and wherever the scab has got into a hard crust a blunt instrument or knife ought to be used, to scarify or scratch off the scab, to enable the liquid to penetrate more easily. The shepherds ought also to have a quantity of the pure spirit of tar on hand. If the animal is badly diseased about the hind quarters, particularly about the tail or thighs, or even about the forearms, he may apply the liquid freely, and rub well in with the hand. There is little danger of injuring the animal on these parts. I have put four glasses of the pure spirit of tar on one sheep, without any injurious effects. But great caution ought to be used about the shoulder, and above the kidneys, and nothing but the mixture ought to be applied to these parts. If a sheep shows symptoms of having got an overdose by staggering a little, which it will do in the course of about fifteen minutes if such is the case, a pitcher of cold water poured along the back and shoulders will give immediate relief, and is an effectual cure. There ought always to be two apartments for the dressed sheep. As I have already said, a cure cannot be relied on without dressing the whole flock where scab breaks out, so that when the shepherd finds the least speck of disease on any animal he ought to put it in one apartment, and the clean or apparently so, into another. The latter may be turned to their former pasture when thoroughly dressed, but the scabbed ones must be kept separate for ten or fourteen days, and then undergo a second dressing, even although the disease may appear entirely subdued, as the first dressing cannot always be relied upon as an effectual cure. They may then be turned out to join the rest of the flock, and I have never known the disease break out afresh under that treatment.

I have cured two lots of hogs* seriously affected with scab in the manner described. The first lot was bought of a dealer in the month of October, and after being brought home and put on a second crop of clover, they showed symptoms of scab in two weeks' but no means were taken to arrest its progress for two months. Application was then made to the dealer to get them returned. He refused on the ground that the applica-

*A hog, or hogget, is a yearling wether.

tion ought to have been made as soon as the disease appeared; and there was no doubt the owner made a mistake on this point, as he had allowed the whole lot of hogs, amounting to a hundred, to become affected, and a good many had lost condition. I was asked by the owner to try and effect a cure, and use any application I considered best. I consulted an old shepherd I knew had a great deal of experience amongst scabbed sheep, and he advised the above remedy, namely: spirit of tar. I dressed every hog. Those that were badly diseased I applied an extra dose of the pure spirit of tar. I instructed them to be turned into a clean pasture field for fourteen days, and although the disease at that time appeared to have been subdued, I dressed the whole lot again. The hogs were clipped during the summer, and fed on turnips in the winter, and no symptom of the disease ever appeared.

The second lot of hogs was also bought from a dealer, and had been three times returned on his hand for being scabbed. The dealer asked my employer to buy them. This he agreed to do at a price much below the original cost, and on condition that every sheep that died of dressing was at his loss. They were greatly reduced in condition, and the wool was falling off in large flakes. I applied the same remedy, but I was instructed by my employer to make certain of a cure, although I killed a good many; consequently, to every hog that was badly diseased, I applied the spirit of tar liberally, putting as much as four glasses on some animals. A good many of them sickened and staggered a few minutes after being dressed. I at once applied the cold water, which was an immediate cure. After fourteen days I dressed the whole lot again, which was in the month of January; and at the term of Whitsunday, when I left, they remained quite clean, and in thriving condition. I never had an opportunity of seeing them again, but, upon inquiry, I was informed they were fed off on turnips during the following winter, and no symptoms of the disease again appeared.

It will be seen, however, that these experiments were conducted upon sheep that had only been for a comparatively short time affected with scab; and, from my own experience, I cannot say how the cure would succeed with a flock of sheep, where the disease had existed for years, and, consequently, the ground had become foul, and liable to communicate infection.

I take the liberty of quoting, on the authority of a friend, an experienced shepherd, who was engaged a good many years ago to superintend a large stock farm in the Highlands, and where scab had prevailed amongst the flocks for many years previous. He states he bathed the whole flocks twice with the spirit of tar. Afterwards, in the month of November, he smeared the whole heavily with the usual mixture of tar and butter, which effectually eradicated the disease. But, he adds, although the cure of scab in a large stock farm entails a great deal of trouble and expense, it can be accomplished. But whilst stock farmers are not all equally zealous in keeping their flocks free of scab, the great difficulty is how to prevent it. While sheep are newly poured with the spirit of tar, or heavily smeared with tar and butter, there is no danger of them catching the disease from coming in contact with scabbed sheep; but it is no uncommon occurrence, and very mortifying, after your whole flock is thoroughly cleaned and clipped, for a strayed scabbed sheep to find its way among your own; and in these mountainous, wide districts, it may have taken up its abode for weeks, or perhaps months, before it is discovered; consequently a fresh outbreak of the scab is the result.

To corroborate this statement, Mr. Gardner states his experience in curing scab in Australia. When he first went out and commenced stock farming, scab prevailed almost generally throughout the colony, and it was the greatest pest and difficulty sheep masters had to contend with. No sooner had he got his flock cured, than they caught the

disease afresh, from coming in contact with some more indolent neighbor, who allowed his stock to be overrun with scab. At length stringent laws were passed, inflicting a heavy penalty on every stock-master who allowed his sheep, if scabbed, to come within a mile of his neighbor's boundary. Mr. Gardner then saw there was a possibility of eradicating the disease. His flock at that time amounted to upwards of 10,000, and the disease was spread throughout the whole, which was certainly a very formidable task to attempt to cure. Clipping time was the period selected for the operation. After every sheep was stripped of its wool, three men were appointed for each sheep, which was thoroughly dressed with an infusion of tobacco and sublimate of mercury. All the sheep that showed the least symptom of disease were kept apart by themselves, and underwent a second dressing in a few weeks. In the course of six months the whole flock was clipped a second time, a system which was practiced in some of the districts of Australia at that time, clipping twice in the year. Mr. Gardner dressed his whole stock again, putting them through the same process; and whilst he resided in the colony, which was for several years, a scabbed sheep never was seen amongst his flock; a very important fact, and a demonstrative proof, that scab amongst sheep can be totally eradicated, even although it has been of several years standing. "Thus," says Mr. Gardner, "in the course of six months, after a great deal of trouble and expense, I got rid of the most troublesome disease that can affect sheep. But the trouble and expense were doubly repaid in the same space of time. The stock fed a great deal better, and the wool was of more value; and, instead of being compelled to pay a shepherd for every 600 sheep, to keep scab in moderation, I put under one man's charge 1,600 sheep, and found he could manage the latter number with more ease and satisfaction than he could formerly the 600 when scab prevailed; and I was enabled to live, myself, in comparative ease and quietness. The quantity of liquid applied was one ounce of the sublimate of mercury mixed in two gallons of water, and a few ounces of tobacco boiled, which was sufficient for twelve sheep." Mr. Gardner adds, that the mixture was attended with a good deal of danger, and, in general, a good many died after the operation, especially if allowed free access to water. They drank greedily in that hot climate, and doubly so after the operation; and, when allowed to do so, a severe swelling took place about the head, and death was generally the result. But when the operation was conducted with care, and the sheep kept entirely free from water, the loss was trifling.

The loss resulting from dressing scabbed sheep with the sublimate of mercury in Scotland has at times been severe, and has led generally to the disuse of it. There is no doubt a more powerful substance cannot be used for destroying the insect, but it is often attended with injurious results to the constitution of the animal. And there is no doubt the spirit of tar is a safer and equally as effectual a cure. The only objection to its use is staining the wool, and a good reduction of price is sometimes experienced at the time of sale. This, however, is certainly the least evil, and can be remedied to a great extent. For example, if a flock of sheep has to be poured twice with the spirit of tar, there is no doubt the wool cannot be sold at a high figure for white; but, again, let the sheep be smeared with tar and butter, and sold for laid wool. The extra weight, in a great measure, counterbalances for the high price obtained for white wool; and the smearing serves a double purpose; it acts as a safe and an effectual cure for scab, where the disease has been of long standing, if the sheep have been dressed with the spirit of tar previously. Indeed, some men of great experience maintain, that a mixture of tar and butter, properly laid on sheep, will effect a cure of scab in sheep, in whatever stage of the disease. And I am informed by a large English dealer and grazier, who has bought annually, for the last twenty years, at Falkirk, from fifty to eighty score of sheep, that

during that period, with the exception of one year, scab always broke out on the way, or shortly after his arrival home, and the only cure he applies is smearing with tar and butter, and he never has had to apply the cure twice to the same animal; but he adds, the great secret of success lies in the shepherd or operator paying attention that no part of the animal is missed. Fifteen sheep per day is all that the most proficient hand can accomplish. Thus, we think, it will appear clear, when scab has existed for any length of time, smearing with tar and butter is an essential application, after dressing with the spirit of tar.

As I have already said, I have never seen or known the disease break out spontaneously amongst sheep; and I am firmly impressed with the idea that, if cases do occur, it is the result of bad management, such as overcrowding, overheating, or the want of bathing annually, especially the latter. For example, about thirty years ago, when smearing with tar and butter was the general practice, it was the common belief that sheep would not live during the winter without being smeared once a year, at least they were certain to become scabbed. So prevalent was this idea, that when an enterprising stock-farmer in Peeblesshire commenced pouring his flock with an infusion of arsenic and water, to obtain a higher price for his wool, he was looked upon by his neighbors with dread, as they considered he was certain to produce scab in his flock, whereby they were sure to catch the disorder. After a successful trial of some years, almost every stock-farmer followed his example, and some ran to the opposite extreme, and kept their sheep in a natural state without applying any composition whatever; but the vermin, such as tick, kade and lice, increased to such an extent that a kind of itch or scale appeared on the skin, which prevented the sheep from thriving, and the owners were compelled to have recourse to some kind of composition to pour or dip their flocks with annually. Although the itch or scale could not be termed scab, still, if their flocks had been allowed to run "white," as it is termed, for years, the result might have terminated in scab; and there is no doubt that bathing or dipping once a year with some kind of composition is a safe preventative.

The great drawback in dipping compositions is the poisonous ingredients they are composed of, and many practical stock-owners consider they weaken the constitution; other stuffs can, however, be obtained free of poison, and equally as good for destroying vermin. Mr. Gardner, Traquair Knowe, has been in the habit for many years of bathing his sheep annually with a mixture of rough turpentine and butter, and has found it more effectual in destroying the vermin than any of the common dipping mixtures in use, and being of an adhesive mixture, it mats the wool together, which tends to keep the animal warm, and has no injurious effect whatever, but, on the contrary, it promotes the growth and quality of the wool. In proof of this, Mr. Gardner has been in the habit for some years of sending his wool to the Leith sales, and for three years it brought the highest price for white Cheviot wool.

Although it is a point generally conceded by practical stock-owners that scab will not break out spontaneously in sheep if properly managed, still it is equally as clear that scab abounds in certain districts. Thus an important question arises. How is it to be prevented from spreading? For whilst no law exists to compel negligent stock-farmers to clean their sheep, it is clear that the most careful and cautious run great risk of their stock catching the disease, especially those that buy largely at markets. So much is this the case, that I am informed by a large stock-farmer and dealer of thirty years' experience, who is in the habit of buying annually at Falkirk, that for many years scab always broke out amongst some of the lots he purchased after they were brought home, and even spread amongst his home-bred stock by coming in contact with each other.

To prevent this evil, he has been in the habit, in latter years, of pouring every sheep he purchased at Falkirk with the spirits of tar immediately on their arrival home, and every sheep that shows the least symptom of disease is kept apart and receives a second dressing. Thus, although a great deal of trouble and expense is incurred, it is the only sure preventative for the disease spreading. Although this is a successful preventative in bought-in stock, a more difficult point presents itself; for example, scab is allowed to prevail amongst a stock of sheep in some of the pastoral districts where there are no march fences, and where the flocks on various farms are daily intermixing. In such cases it is a matter of impossibility to prevent scab from spreading, and the only remedy is to get a law to compel the owners of the diseased sheep to get them cured, or to keep them apart from neighboring healthy stocks under a severe penalty. If some stock-farmers are so careless and negligent as to allow their stocks to be overrun with scab, there is no reason they should be allowed to bring trouble and expense on their neighbors; and until some stringent law of this nature is passed, scab will never be totally eradicated from amongst our sheep. But if stock-farmers and graziers were all alike anxious to get clear of the disease, and apply the proper cure, it might be eradicated from amongst the flocks of Great Britain in twelve months.

LAWS OF OHIO

FOR THE

ENCOURAGEMENT OF AGRICULTURE.

AN ACT for the encouragement of Agriculture.

SECTION 1. *Be it enacted by the General Assembly of the State of Ohio*, That whenever thirty or more persons, residents of any county or district embracing two counties of this State, shall organize themselves into a society for the improvement of agriculture within said county or district, and shall have adopted a constitution and by-laws, agreeably to the rules and regulations to be furnished by the Ohio State Board of Agriculture, hereinafter created, and shall have appointed the usual and proper officers; and when the said society shall have raised and paid to their treasurer, by voluntary subscription, or by fees imposed upon its members, any sum of money in each year, not less than fifty dollars; and whenever the president of said society shall certify to the respective county auditors, the amount thus paid, attested by the oath of the treasurer before a magistrate, it shall be the duty of the said county auditor, embraced within the district in which said society shall be organized, to draw an order on the treasurer of the respective county, in favor of the president and treasurer of said society, for a sum equal to the amount thus raised; provided, it does not exceed half a cent to each inhabitant to the said county, upon the basis of the last previous national census, but not to exceed in any county the sum of two hundred dollars, and it shall be the duty of the treasurer of the said county to pay the same.

SEC. 2. That it shall be the duty of the several county or district societies which may be formed under the provisions of the succeeding section, during the continuance of this act, annually to offer and award premiums for the improvement of soils, tillage, crops, manures, implements, stocks, articles of domestic industry, and such other articles, productions and improvements, as they may deem proper, and may perform all such acts as they may deem best calculated to promote the agricultural and the household manufacturing interests of the district and of the State; and it shall also be their duty, so to regulate the amount of premiums and the different grades of the same, as that it shall be competent for small as well as large farmers to have an opportunity to compete therefor; and in making their awards, special reference shall be had to the profits which may accrue, or be likely to accrue, from the improved mode of raising

the crop, or of improving the soil or stock, or of the fabrication of the article thus offered, with the intention that the premium shall be given for the most economical mode of improvement; and that all persons offering to compete for premiums, on improved modes of tillage, or the production of any crops, or other articles, shall be required, before such premiums are adjusted, to deliver to the awarding committee a full and correct statement of the process of such mode of tillage or production, and the expense and value of the same, with a view of showing accurately the profits derived or expected to be derived therefrom.

SEC. 3. It shall be the duty of each county or district society to publish annually a list of the awards, and an abstract of the treasurer's account, in a newspaper of the district; and to make a report of their proceedings during the year, and a synopsis of the awards for improvements in agriculture and household manufactures, together with an abstract of the several descriptions of those improvements, and also make a report of the condition of agriculture in their county or district, which reports shall be made out in accordance with the rules and regulations of the Ohio State Board of Agriculture, and shall be forwarded to the State Board at their annual meeting in December, in each year; and no subsequent payment shall be made from the county treasury, unless a certificate is presented to the auditor from the president of the State Board, showing that such reports have been duly made.

SEC. 4. Enumerates the incorporators.

SEC. 5. It shall be the duty of said Board, or any ten or them, to meet in the city of Columbus, on the first Wednesday of April, after the passage of this act, and to organize by appointing a president, secretary and treasurer, and such other officers as they may deem necessary; also, determine by lot the time that each member shall serve, so that the term of service of one-half of the members shall expire annually, on the day of the annual meeting in December; and the president shall have power to call meetings of the Board whenever he may deem it expedient.

SEC. 6. There shall be held in the city of Columbus, on the first Wednesday after the first Monday in December, an annual meeting of the Ohio State Board of Agriculture, together with the president of each county agricultural society, or other delegates therefrom, duly authorized, who shall, for the time being, be ex-officio members of the State Board of Agriculture, for the purpose of deliberation and consultation as to the wants, prospects and condition of the agricultural interest throughout the State; and at such annual meeting, the several reports from the county societies shall be delivered to the president of the Ohio State Board of Agriculture; and the said president and delegates shall, at this meeting, elect suitable persons to fill all vacancies in the Ohio State Board of Agriculture.

SEC. 7. And it shall be the duty of said Board to make an annual report to the General Assembly of this State, embracing the proceedings of the Board for the past year, and an abstract of the proceedings of the several agricultural societies, as well as a general view of the condition of agriculture throughout the State, accompanied by such recommendations as they may deem interesting and useful.

SEC. 8. That the act to authorize and encourage the establishment of agricultural societies in this State, and for other purposes therein set forth, passed March twelfth, one thousand eight hundred and thirty-nine, be and the same is hereby repealed; provided, the acts done, obligations incurred, and rights acquired under the provisions thereof, shall remain in nowise altered or affected by this act.

Mar. 25 1846

AN ACT to amend an act entitled "an act for the encouragement of agriculture," passed February 27, 1846.

SECTION 1. *Be it enacted by the General Assembly of the State of Ohio, That the "Ohio State Board of Agriculture" shall consist of ten members, five of whom shall constitute a quorum.*

SEC. 2. *That Allen Trimble, M. L. Sullivant, Samuel Medary, Darius Lapham, A. E. Strickle, Arthur Watts, M. B. Bateham, John Coddington, Jared P. Kirtland and I. Moore, be continued members of the Board, the term of service and the mode of appointing their successors to remain unaltered by this act.*

SEC. 3. *That the sum of two hundred dollars be and the same is hereby appropriated from the treasury for the use of the Board; and an account of the expenditures of the Board shall be included in the annual report of the Board to the General Assembly.*

SEC. 4. *So much of the law to which this is an amendment, as conflicts with the provisions of this act, is hereby repealed.*

AN ACT to protect agricultural fairs and fair grounds.

SECTION 1. *Be it enacted by the General Assembly of the State of Ohio, That it shall be lawful for any justice of the peace, on the application of any of the officers of any State, county, township, or any independent agricultural societies, or industrial associations, to appoint a suitable number of special constables, to assist in keeping the peace during the time when such society shall be holding their annual fairs, and make an entry in his docket of the number and names of all such he may appoint.*

SEC. 2. *All such constables so appointed shall have all the power of constables to suppress riots, disturbances and breaches of the peace; they may, upon view, arrest any person or persons who may be guilty of violating any of the laws of the State; may pursue and arrest any person fleeing from justice in any part of the State; to apprehend any and all persons in the act of committing any offense against the laws thereof, and may, upon reasonable information, supported by affidavit, procure process for the arrest of any person or persons who may be charged with a breach of the peace, and forthwith bring such person or persons before the competent authority, and enforce all the laws for the preservation of good order.*

SEC. 3. *No person shall be allowed to keep any shop, booth, tent, wagon, or other carriage, vessel or boat, or any stand or table, for the sale of any spirituous or other liquors, or sell or expose to sale, give, barter or otherwise dispose of, in or near such shop, booth, tent, wagon, or other carriage, vessel, boat, stand or table, or in any other way or place, any spirituous or other liquors, at or within the distance of two miles from the place where any such agricultural fairs are held.*

SEC. 4. *That any person or persons who shall be guilty of a breach of this act, and shall be notified by any one of the officers authorized to make an arrest or seizure, or by any other person, that he, she, or they are violating the law; and if, after such notice, such person shall continue in such violation, he, she, or they shall forfeit and pay for such offense a fine of not less than five nor more than fifty dollars, to be paid over to the treasurer of such agricultural society where the offense was committed; and any judge of the court, sheriff, coroner, justice of the peace of the proper county, or any constable of the proper township, or the constables specially appointed, shall, upon view or information, without warrant, apprehend any person so offending, and seize such booth, tent or wagon,*

or other carriage, stand, vessel or boat, selling spirituous or other liquors, and convey the same to a place of safe keeping, and take the person so offending before some officer having competent jurisdiction, together with an inventory of the things so seized, and the officer before whom such alleged offender shall be brought shall proceed forthwith to inquire into the truth of the accusation, and, if true, shall enforce the penalties of this act.

SEC. 5. If the accused shall fail to pay such fines as shall be assessed, together with all the costs of proceeding, including the necessary expenses of such seizure, the said officer before whom such offender was tried shall forthwith issue a venditioni exponas, commanding any constable of the township in which such inquiry shall be held to make the fine and costs, necessary expenses, and costs of execution, by sale of so much of the property as shall be necessary therefor, and make return thereof within ten days thereafter.

SEC. 6. That, in the execution of the venditioni exponas, the said constable, at least ten days before the sale, shall advertise the property to be sold at two of the most public places of the township, where the same is to be sold, at one of which places, to be designated in the notice, between the hours of ten o'clock A. M. and four o'clock P. M., said sale shall be held; said constable first selling or offering for sale the articles which the offender brought on to the ground for traffic, and the overplus of the property so seized as aforesaid, after the satisfaction of said venditioni exponas, shall be delivered to the defendant, on demand; but if he shall fail to demand the same for ten days after such sale, the same shall become forfeited to the said agricultural society, and if the property so seized shall be found insufficient to satisfy said venditioni exponas and costs of execution, said justice of the peace shall, at any time thereafter, on request of the treasurer of said society, issue a fieri facias to collect the balance thereof.

Passed April 11, 1856.

AN ACT to amend section three and section six of an act for the encouragement of agriculture, passed February 28, 1846.

SECTION 1. *Be it enacted by the General Assembly of the State of Ohio,* That section three of the above recited act be amended so as to read as follows: It shall be the duty of each county or district society to publish annually a list of awards, and an abstract of the treasurer's account, in a newspaper of the district; and to make a report of their proceedings during the year, and a synopsis of the awards for improvements in agriculture and household manufactures, together with an abstract of the several descriptions of these improvements, and also make a report of the condition of agriculture in their county or district; which reports shall be made out in accordance with the rules and regulations of the Ohio State Board of Agriculture, and shall be forwarded to the State Board at their annual meeting in January in each year; and no subsequent payment shall be made from the county treasury unless a certificate be presented to the auditor from the president of the State Board, showing that such reports have been made.

SEC. 2. That section six be amended so as to read as follows: There shall be held in the city of Columbus, on the first Wednesday after the first Monday in January, an annual meeting of the Ohio State Board of Agriculture, together with the president of each

County Agricultural Society, or their delegate therefrom duly authorized, who shall, for the time being, be ex-officio members of the State Board of Agriculture, for the purpose of deliberation and consultation, as to the wants, prospects, and condition of the agricultural interests throughout the State; and at such annual meeting the several reports from the county societies shall be delivered to the president of the Ohio State Board of Agriculture, and the said president and delegates shall, at this meeting, elect suitable persons to fill all vacancies in the Ohio State Board of Agriculture.

SEC. 3. That sections three and six be and the same are hereby repealed.

SEC. 4. This act shall take effect and be in force from and after its passage.

Passed February 20, 1861.

AN ACT to protect agricultural fairs.

SECTION 1. *Be it enacted by the General Assembly of the State of Ohio*, That it shall be unlawful for any person to exhibit or show any natural or artificial curiosity for any price or gain, or shall set up to let or use for profit any swing, revolving swing, flying horses, or whirligigs, within one-fourth of a mile of the fair ground of any agricultural society in this State, while the fair of such society is being held therein, unless such person shall first have obtained the written permission of the board of such agricultural society to make such exhibition.

SEC. 2. That if any person shall violate the provisions of this act, he shall, on conviction thereof, be fined in any sum not less than one nor more than one hundred dollars; and all moneys derived from the violation of this act shall be appropriated to the support of common schools.

SEC. 3. This act shall take effect from and after its passage.

Passed April 6, 1861.

AN ACT to provide for the creation and regulation of township agricultural societies.

SECTION 1. *Be it enacted by the General Assembly of the State of Ohio*, That when any number of natural persons of any township in the State of Ohio shall form an association for the promotion of agriculture in such township, and shall, under their hands and seals, make a certificate, and acknowledge the same before a justice of the peace, in which shall be specified the name of the society, the objects of its formation, and the township in which it shall be located, and shall record the same in the recorder's office of the proper county, such society shall be deemed a body corporate, with succession, and with power to sue and be sued, plead and be impleaded, defend and be defended, contract and be contracted with; to make and use a common seal, and the same to alter at pleasure; and shall have power to purchase and hold, in fee simple, or to rent or lease such real estate as may be required as a site for holding fairs, not exceeding twenty acres, and to establish all necessary rules and regulations for the management of such fairs, and the legitimate business of the society.

SEC. 2. This act shall take effect on and after its passage.

Passed May 1, 1861.

AN ACT requiring the return of statistics.

SECTION 1. *Be it enacted by the General Assembly of the State of Ohio*, That the several township, ward or precinct assessors shall annually, at the time of taking the lists of personal property for taxation, take from each person and company in his township, ward or precinct, a statement of the number of acres he or they may have had the preceding year in wheat, rye, barley, corn, oats and buckwheat, and the number of bushels of each produced the preceding year. The number of acres in timothy grass, and the number of tons of hay produced therefrom the preceding year; the number of acres grown in clover, the number of tons of hay made from it, the number of bushels of seed obtained, and the number of acres of clover plowed under for manure; the number of acres planted in tobacco, and the number of pounds obtained; the number of tons of pig-iron manufactured, and bushels of stone-coal dug; the number of acres sown in flax, number of pounds of fiber gathered, and the number of bushels of seed obtained; the number of acres planted in sorgo, the number of gallons of syrup manufactured, and the number of pounds of sugar obtained; the number of pounds of maple sugar made, and the number of gallons of syrup manufactured; the number of pounds of butter and cheese manufactured; the number of acres planted in potatoes, and the number of bushels obtained; the number of acres planted in sweet potatoes, and the number of bushels obtained; the whole number of acres planted in vineyards; the number planted within the last year; the number of pounds of grapes gathered the last year; the number of gallons of wine pressed the last year; the number of pounds of wool shorn the previous year; the number of acres occupied as orchards, and the number of bushels of apples, peaches and pears produced the previous year; the number of acres used for pasturage the previous year, and the number of acres owned, but uncultivated, within the township the previous year; the amount of all United States bonds; the amount of all State bonds or certificates of indebtedness of any kind, and the amount of all legal tender notes or other moneys now exempt from taxation by any law of the United States or any law of this State, owned or held by any person, firm, bank or incorporation, or by any other party whatever within this State. The assessor is hereby authorized to administer all oaths necessary to carry into effect the provisions of this act.

SEC. 2. That the assessors shall make return of all the preceding statistics to their respective county auditors at the same time they return the list of personal property for taxation, and each county auditor shall make return of all such statistics returned to his office to the Auditor of State, on or before the first day of August, annually; and if any assessor or county auditor shall neglect or refuse to make out and return statistics as required by this act, shall forfeit and pay to the State of Ohio any sum not less than twenty nor more than one hundred dollars, for the use of the common schools of the proper county; and it is hereby made the duty of the prosecuting attorney of said county, on notice being given by the Auditor of State, whose duty it shall be to give such notice whenever any officer or officers shall neglect or refuse to make out and return statistics as required by this act, to proceed to collect said penalty in the name of the State of Ohio, before any court having competent jurisdiction, and he shall have ten per cent. of amount collected for his fees for collecting the same; and the State Board of Agriculture and Commissioner of Statistics shall have access to all statistics contemplated in this act, at the office of the Auditor of State.

Passed April 3, 1868.

AN ACT to provide for the establishment of a bureau of statistics in the office of the Secretary of State, and to repeal certain acts therein named.

SECTION 1. *Be it enacted by the General Assembly of the State of Ohio*, That it shall be the duty of the Secretary of State annually, hereafter, to prepare from the official reports, and from whatever other reliable sources to which he may obtain access, as full, accurate and intelligible tables of the statistics of Ohio as may be in his power, and report the results of his labors to the general assembly at its next meeting.

SEC. 2. That in order to the more perfect collection of the statistical information contemplated by this act, it shall be the duty of any state, county or other officer, without compensation, to answer fully and promptly such special and general questions as the Secretary of State may ask in carrying out the provisions of the eighth section of the fifteenth article of the constitution of this State.

SEC. 3. That any person who, by this act, is required to give information, and who shall refuse or neglect to answer such questions, shall forfeit to the use of the State of Ohio any sum not exceeding fifty dollars, at the discretion of the court of common pleas for the proper county; which fine shall be collected by the prosecuting attorney thereof, as other fines are collected, by law.

SEC. 4. That the several classes of statistics now returnable to the Auditor of State, the Attorney General or other officer, not necessary to the duties of such officers, be transferred by them to the Secretary of State, and be by him embodied in the report provided for in this act.

SEC. 5. That for the purpose of the more complete and efficient performance of the duties enjoined by this act, the Secretary of State is hereby authorized, if necessary, to employ some competent person, at an amount not exceeding five hundred dollars, to be paid upon the warrant of the Auditor of State, in the same manner as clerks in the office of Secretary of State are now paid.

Passed April 17, 1868.

AN ACT supplementary to an act entitled "an act for the encouragement of agriculture," passed February 28, 1846:

SECTION 1. *Be it enacted by the General Assembly of the State of Ohio*, That all county agricultural societies which have been or may hereafter be organized under the act to which this is supplemental, be and the same are hereby declared bodies corporate and politic; and as such shall be capable of suing and being sued, and capable of holding in fee simple such real estate as they may have heretofore or shall hereafter purchase as sites whereon to hold their fairs.

SEC. 2. That all deeds, conveyances and other agreements in writing, made to and by such county agricultural societies, for the purchase of real estate as sites whereon to hold their fairs, shall be good and valid in law and equity, and shall vest a title in fee simple in such societies to said real estate without words of inheritance.

SEC. 3. In all cases where such county agricultural societies shall have heretofore purchased, or shall hereafter purchase real estate as sites whereon to hold their fairs, the county commissioners of such counties may, if they think it for the interest of the counties and societies, pay out of the county treasuries of such counties the same

amount of money, for the purpose of the purchase and improvement of such sites as shall have been or shall hereafter be paid by said agricultural societies or individuals for such purpose.

SEC. 4. In all cases where agricultural societies shall be dissolved or cease to exist, in any county where payments have been made for real estate, or improvements upon such real estate, for the use of any agricultural society, then all such real estate and improvements shall vest in fee simple to the county making such payments.

Passed February 15, 1863.

AN ACT to prevent spreading of contagious diseases amongst horses, cattle and stock.

SECTION 1. *Be it enacted by the General Assembly of the State of Ohio*, That it shall be unlawful for any person to sell, barter, or dispose of, or permit to run at large, any horse, cattle, sheep, or other domestic animals, knowing such horse, cattle, sheep, or domestic animals are infected with contagious or infectious disease, or have been recently exposed thereto, unless he shall first duly inform the person to whom he may sell, barter, or dispose of such horse, cattle, sheep, or other domestic animal of the same; and any person so offending shall, on conviction thereof before any court having competent jurisdiction, be fined in any sum not less than twenty nor more than two hundred dollars, with costs of prosecution, or be confined in the jail of the county for not more than thirty days, at the discretion of the court.

SEC. 2. That if any person, being the owner or having the charge of any horse, cattle, sheep, or any kind of stock, knowing the same to be infected with contagious or infectious disease, shall knowingly permit it to come in contact with any other person's horses or stock, without such person's knowledge or permission, shall be fined in any sum not less than fifty nor more than five hundred dollars, with costs of prosecution, or be confined in the jail of the county for not less than ten nor more than fifty days, at the discretion of the court.

SEC. 3. This act shall take effect from and after its passage.

Passed April 16, 1867.

AN ACT relating to ditches.

SECTION 1. *Be it enacted by the General Assembly of the State of Ohio*, That the commissioners of any county shall have power, at any regular or called session, when the same will be conducive to the public health, convenience or welfare, to cause to be constructed as hereinafter provided, any ditch, drain or water course within said county.

SEC. 2. That before the commissioners shall establish any ditch, there shall be filed with the auditor of such county, a petition signed by one or more of the landowners whose lands will be assessed for the expense of the same, setting forth the necessity thereof, with a general description of the proposed starting point, route and terminus, and shall file a bond, with good and sufficient securities to the acceptance of the auditor, conditioned to pay all expenses in case the commissioners shall fail to establish said proposed ditch; and it shall be the duty of the auditor to furnish a copy of said petition to the commissioners, who shall thereupon proceed, with or without an engineer, as they shall

deem best, to view and make a computation of the number of cubic yards of earth to be removed from each section, with an estimate of the costs of construction of the work apportioned to each parcel of land, and specify the manner in which the work shall be done, the necessary flood gates, waterways, bridges and farm crossings to be made, with such other suggestions as they may deem material, and file their report with the auditor, and fix a day for the hearing thereof. It shall be the duty of the auditor, on said report being filed, to cause notice to be given by publication for four consecutive weeks in some newspaper published or of general circulation in said county, of the pendency and prayer of said petition, and the time set for the hearing thereof, which notice shall contain a pertinent description of the termini of such proposed ditch, its direction or course from its source to its outlet, and the sections or tracts of land through which it shall be proposed by the commissioners to establish the same, and immediately a brief written notice to non-residents interested, whose post-office address is known to the county auditor, or can be ascertained by inquiry at the treasurer's office.

SEC. 3. Any person claiming compensation for lands or damages by the construction of such proposed ditch, if the same should be established in accordance with the report of said commissioners, shall make application in writing therefor, and file the same with the auditor, on or before the day set for the hearing of the petition; and on failure to make such application, shall be deemed to have waived all right to such compensation or damage.

SEC. 4. Said commissioners, at the time set for the hearing of said petition, shall, if they find the provisions of the second section of this act to have been complied with, proceed to hear said petition, and if they find such ditch to be necessary, and conducive to public health, convenience or welfare, they shall establish the same as specified in the report.

SEC. 5. It shall be lawful for any person interested in the location of such ditch, to appeal from the proceedings of said commissioners to the probate court of the county, by filing with the auditor, within ten days from such decision, an undertaking, with two sufficient sureties, conditioned for the payment of all costs and expenses caused by such appeal if the decision of said commissioners be sustained, which undertaking must be approved by the auditor; and thereupon said auditor shall certify the proceedings, with said undertaking, to the probate court, and said appeal shall be filed by the party appealing, within ten days thereafter, in the office of said court.

SEC. 6. It shall be the duty of the probate judge, upon the filing of such undertaking and transcript, as provided in the preceding section, to docket the same, entitling said case the appellant, plaintiff, and the county commissioners defendant; and said judge shall impanel a jury of twelve disinterested freeholders of the county, and shall issue a venire therefor, directed to the sheriff or any constable of such county, returnable on a day therein named, not exceeding ten days from the date thereof, specifying the time; and it shall be the duty of the appellant to notify the principal petitioner, if he be within the county, by notice in writing, of the time and place of such meeting, to the satisfaction of said court.

SEC. 7. At the time specified in said notice, the probate judge shall hear and determine all questions arising upon the record, and if he find that said proceedings are regular in substance, he shall administer to said jury an oath to faithfully and impartially view the premises along the route of such proposed ditch, and report in writing to said court, whether it will be conducive to the public health and welfare to cause said ditch to be established, which said report shall be signed by all the jurors, and filed with the probate judge within five days after taking such oath, unless the court, for good cause, allow further time.

SEC. 8. Upon the report of said jury, said judge shall make a record of the proceedings had before him in the case; and if said report be against the appellants, all the costs of said appeal shall be taxed against said appellants, and execution awarded against them; the fees of said jury shall be taxed at one dollar and fifty cents per day for the time employed, and mileage at five cents per mile from the place of residence to said probate court.

SEC. 9. If the jury shall report against the location of such ditch, the costs made before the commissioners shall be taxed against the principal petitioner, and be collected as provided in section eight.

SEC. 10. In case of the appeal provided for in the foregoing sections, all further proceedings by the commissioners shall cease until said appeal is decided.

SEC. 11. If any application for compensation or damages shall have been made agreeably to the third section of this act, the commissioners shall fix a day on which they will meet and determine, upon actual view of the premises, the compensation or damage to be paid to such applicant; and also a day when they will make their report. After the report of said commissioners shall have been made, the petitioners may discontinue the said proceedings, by paying all costs that have accrued up to that time, and notifying the auditor in writing that they will not further prosecute the same. But no proceeding shall be discontinued unless the notice thereof shall be signed by a majority of the petitioners for said ditch.

SEC. 12. If any person shall feel aggrieved by the report of said commissioners in the assessment of damages or compensation, they may, within fifteen days from the making of said report, appeal from the decision of the commissioners to the probate court of the county, by giving an undertaking, with good and sufficient sureties, to be approved by the auditor, conditioned to pay all costs on such appeal; if the appellants shall fail to sustain their appeal against the decision of the commissioners, and such undertaking having been given, the auditor shall forthwith certify to the probate court a copy of said appeal, together with a description of the property taken, or injured, as contained in the report of the commissioners, which shall be docketed in said court, styling the appellant plaintiff, and the commissioners defendant.

SEC. 13. If the appeal is taken on account of damages of compensation allowed by the commissioners, such proceedings shall be had to determine the amount, as are required by the act entitled "An act to provide for the compensation and damages to the owners of private property appropriated to the use of corporations," passed April 30, 1852; and the compensation or damages found in favor of said claimant shall be certified by said probate judge to the county auditor, and paid out of the county treasury from the general fund. If no damages or compensation shall have been claimed, or if no appeal shall have been taken from the report of the commissioners, and said petitioners shall not have discontinued proceedings as above provided, or if the damages and compensation shall have been paid out of the county treasury, the said commissioners shall proceed to make a just and fair estimate of the average cash value of the construction per linear rod, cubic yard or foot of earth, and every section or allotment of such ditch, and apportion the costs of the location thereof, including printer's fees, the damages and compensation, if any shall have been assessed, and costs in probate court, if adjudged against the commissioners, and the labor of constructing said ditch, and award to each person or persons owning lands through, or in the vicinity of which said proposed ditch may be established, as shall be deemed just and right, according to the benefits to be derived by constructing the same, and shall specify the time in which said costs and expenses shall be paid to the county treasurer, and the time and manner in which said labor shall be

performed, and appoint a day on which they will meet to hear exceptions to such apportionment; and they shall cause a stake or monument to be placed at the boundaries of each of the several portions, which shall be numbered progressively down stream, at each one hundred feet. And said auditor shall give notice, in tabular form, of the apportionment, containing: First—the name of the owner as it appears on the tax duplicate at the date of said notice. Second—description of each parcel of land assessed for the construction of said ditch. Third—number of rods or feet apportioned to each of said parcels of land. Fourth—the estimated value per rod, cubic yard or foot of construction. Fifth—the expenses, including damages and compensation, if any shall have been awarded. And said notice shall state the time as fixed by the commissioners, when the costs and expenses shall be paid and the work completed, and also the day when and where the commissioners will meet, to hear exceptions to such apportionment. Said notice shall be published for four consecutive weeks in some newspaper published or of general circulation in said county, at the rate now authorized by law for publishing delinquent tax sales, and no more. On the day named in such notice the commissioners shall meet, and if no exceptions have been filed to said apportionment, they shall confirm the same; but if exceptions in writing have been filed, they shall hear such exceptions, and any testimony offered by any party who has filed exceptions, and either one of said commissioners shall be authorized to administer oaths to witnesses. On said hearing they may confirm said apportionment or change the same; and may again make an actual and careful view of the route of said ditch or any part thereof, and the lands to be affected thereby; but in no case shall they hear exceptions to, or review any question with reference to damages or compensation, except as to the apportionment of such damages or compensation as above provided. In making the apportionment specified in this section, the commissioners shall assess separately, according to their respective value, the particular estate which any person interested in the construction of the ditch may have in the land affected thereby, so that estates for life, for term of years, or in remainder, shall each pay its just proportion of the assessment. And all estimates shall be made by actual and not apparent quantities or distance.

SEC. 14. If any of the persons interested in the opening of said ditch shall fail to procure the excavation thereof, or that portion set off to them, respectively, by the commissioners, in the manner and time specified, it shall be the duty of said commissioners to let said work at public sale, and take a bond payable to the State of Ohio, of the person or persons to whom said work is let, with good and sufficient sureties for the faithful performance of the same within a specified time; and on completion of the work thus let, and acceptance by said commissioners, the auditor shall issue a certificate to the persons doing said work, for the sum due them, and shall enter the amount of said certificate upon the duplicate of the county against the tract or lot benefited by the opening of that portion of said ditch, together with legal interest, and the amount so entered shall be collected by the treasurer of the county as other taxes, and paid by him to the person holding said certificate; provided, however, that in no case shall said work be sold or let by the said auditor at a greater price than twenty per cent. above the estimated value fixed by said commissioners, as hereinbefore provided; and provided farther, that no person having an official duty to perform about said ditch, shall be interested directly or indirectly in any contract for the construction of such ditch. Any contract in which any of the said officers shall be interested, shall be deemed fraudulent and void. All the expenses attending the letting of said work, except as hereinafter provided, shall be assessed against the land to which said work was apportioned, and collected as taxes by the treasurer, and paid to the persons to whom the same is due.

SEC. 15. If the commissioners, auditor or probate judge, shall neglect to perform any of the duties imposed upon them by the provisions of this act, they shall forfeit and pay a fine of twenty-five dollars for every such neglect, to be recovered before any officer having competent jurisdiction, for the benefit of common schools in such county, at the suit of any person aggrieved thereby, in the name of the State.

SEC. 16. For the purpose of keeping any ditch open and in good repair, that is now or may be hereafter constructed under any law of this State, a majority of the resident landowners taxed for the construction thereof, may determine from time to time what sum may be necessary to be levied for the repair of the same. They shall make a statement of the amount, signed by a majority of such tax payers, and forward the same to the auditor of the county. The auditor shall assess the same on each tract or parcel of land taxed for the original construction of said ditch, in the same proportion that said original tax was levied, and enter the same on the duplicate of the county the same as other taxes.

SEC. 17. There shall be elected by the qualified electors in each township in or through which any ditch, drain or water course shall have been constructed, at the annual election in April, each year, one supervisor of ditches for such township, who shall take an oath and give bond as is or may be required of supervisors of highways. It shall be his duty to see that all ditches, drains or water courses which have been constructed under any law of this State within his township, are kept open and in good repair, and for that purpose he shall have the same powers to call out the landowners whose lands were assessed for the construction of the ditch requiring repairs, to aid in the repair thereof, that supervisors of highways have by law to call out persons to perform work on such public highways. And each landowner performing work under the direction of such supervisor of ditches shall be entitled to receive a certificate therefor from said supervisor, to apply in payment of any assessment which has been or shall be assessed against his land under any provision of this act at the same rate per day that is or may be allowed for work on the public highways; and such certificate shall be received by the county treasurer in payment of so much of the tax assessed against the lands of such owner for ditch purposes. The county auditor shall furnish each supervisor of ditches within his county, with a statement of the assessments made for keeping open or repair of ditches within his township, giving the name of the owner as the land stands charged upon the duplicate, a brief but pertinent description of each tract of land, the ditch for which the same was assessed, and the amount of tax assessed on each tract opposite thereto. And the supervisor, upon receiving such statement, shall give a written notice to each landowner, if he be a resident of his county, and if not, then directed to such non-resident through the postoffice, if his residence be known to such supervisor, of the amount of tax assessed upon each tract of land as described by the auditor in his statement, notifying each when and where he will attend to the supervision of the work upon such ditch. All moneys assessed for the repair of ditches, and paid into the county treasury, shall be paid over to the supervisors of ditches in the several townships in which the same were assessed, upon the order of the county auditor. And the several supervisors of ditches shall expend the same in repairing the ditch for which it was assessed, after giving two weeks public notice of the time and place when and where he will attend to sell or let such work in all cases where the amount of such work will exceed ten dollars. Such notice shall be given by posting up written notices in three public places in such township. Every supervisor shall hold his office for one year, and shall receive for his services, when actually employed in the business of his office, two dollars per day, to be paid out of the moneys assessed under this act. Each supervisor shall, on or before the first

Monday in March, annually, make settlement with the auditor of his county, and file with such auditor his account duly verified, of all moneys by him received in his official capacity, with a statement of the work performed under his direction, by whom performed and upon what ditch. And he shall keep a separate account with each ditch in his township. If from any cause the electors shall fail to elect a supervisor of ditches in any township where ditches have been or may be constructed, under any law of this State, it shall be lawful for the trustees of such township to appoint such supervisor from among the electors of such township, who shall qualify and perform all the duties of the office, as if he had been elected, until the next spring election, and such appointments may be made for the year 1871: Provided, that the supervisor shall not make any repairs or improvement on any ditch until a tax or assessment shall have been made or levied.

SEC. 18. Any ditch located under the provisions of this act, of sufficient capacity to carry off the water that annually flows into it, together with the proper drainage of the lands taxed for the construction of the same, shall not be again taxed or assessed for the benefit and improvement of any lands lying above the lands taxed for the construction thereof; and in all cases where any such ditch shall empty into any lower ditch, above described, for the benefit of lands lying above the lower ditch, it shall be the duty of the commissioners to levy a sufficient tax on the lands benefited by the new ditch, to enlarge any such lower ditch so as to confine the water to the same level that it originally had before an additional amount of water emptied into such lower ditch for the benefit of lands lying above said lower ditch.

SEC. 19. The county auditor shall keep a record of all proceedings had in each case, and all costs and expenses, costs of construction and damages that may be assessed under the provisions of this act, and on neglect of the parties to pay, on or before the time the same becomes due, the auditor shall issue a certificate to the person to whom said costs and expenses are due, and shall enter the same upon the duplicate, together with the legal interest against the tract of land benefited by the opening of said ditch, and the amount shall be collected by the treasurer of said county as other taxes, and paid over on the order of the auditor to the persons holding said certificate. And said auditor shall keep an account, by items, with each ditch and fund, separately.

SEC. 20. That the fees of the county auditor, treasurer, commissioners and probate judge, shall be the same as provided by law for like services in other cases, and shall be paid out of the general fund; the surveyor and engineer shall be allowed the same fees as they are entitled to in other cases for the time he may be employed; each chainman, axman and rodman shall receive one dollar and twenty-five cents per day; the expense of drawing the original petition and filing the same with the county auditor, must be paid by the petitioners. The surveyor, engineer, chainmen, axmen, rodmen, printers and all others, except the auditor, treasurer, commissioners and probate judge, shall be paid by the parties respectively interested and benefited, in the construction of said ditch, in the manner heretofore in this act provided. All cost bills shall be examined and if approved signed by the commissioners.

SEC. 21. When any ditch, established under this act, drains, either in whole or in part, any public or corporate road or railroad, or benefits any of said roads, so that the road bed or traveled track of any such road will be made better by the construction of such ditch, the commissioners shall apportion to the county, if a county, State or free turnpike road; to the township, if a township road; to the company, if a corporate road or railroad, such portion of the costs and expenses thereof, as to private individuals, and require them to pay said costs and perform said labor in like manner as individuals.

SEC. 22. In all cases where any proposed ditch shall be in more than one county, application shall be made to the commissioners of each of said counties, and the commissioners must make a report for each county, and application for damages must be made in the county where the land is situated, and a majority of the commissioners of each county, when in joint session, shall be competent to locate and establish the ditch; provided, that no commissioner shall serve in any case where he is personally interested. Any two commissioners may form a quorum for the transaction of business under this act in their respective counties.

SEC. 23. The provisions of this act shall be applicable to sections sixteen and lands granted in lieu thereof for school purposes, while the same remains township property; and the trustees of any township owning any such lands, or where the same is situate, may file the petition and bond required by section two of this act.

SEC. 24. If any person shall willfully obstruct any ditch, or shall willfully divert the water from its proper channel, he shall forfeit and pay to the county in which the ditch or water course may be situated, the sum of ten dollars, to be recovered before any justice of the peace, or other court having jurisdiction of the matter, in the name of the State of Ohio for the use of the proper county, and shall, moreover, be liable for all damages that may accrue to any person by such act.

SEC. 25. Wherever the words "ditch," occurs in this act, the same shall be understood to embrace and include any side or lateral ditch, or any drain or water course necessary to secure the objects and purposes for which any main ditch, drain or water course may be made: This act shall be construed to extend to, and include, the straightening of streams and water courses to which the same may be applicable.

SEC. 26. The county commissioners at the time set for hearing of a petition for the construction of a ditch, shall, if said proposed ditch is not on the best route to effect the object sought, or if they find the proposed drainage can be effected as well in connection with a ditch necessary for the improvement of public highways already established, or such as may be hereafter required, they shall proceed to so establish the same; and in case said ditch is proposed upon a line or sub-division of sections where a public road may be required, and in all cases where ditches are located along highways, they shall proceed to locate the same at a sufficient distance from the center of such highway so as to admit of a good road along the said center, and the earth taken from such ditch shall be so placed upon said road as to form a turnpike. No part of such earth shall be placed nearer to said ditch than two feet, and said commissioners in locating ditches, shall, in all cases as far as practicable, avoid laying the same diagonally across sections or parts of sections.

SEC. 27. The act entitled an act to provide for locating, establishing and constructing ditches, drains and water courses, passed March 24, 1859, (S. & C., vol. 1, p. 523,) and an act to provide for locating, establishing and constructing ditches, drains and water courses, passed March 27, 1861, (O. L., vol. 58, p. 49,) and the amendatory act passed March 20, 1867, (Laws, vol. 64, p. 66,) and the amendatory act passed April 13, 1867 (Laws, vol. 64, p. 143,) and the act passed April 25, 1868; and the act passed April 30, 1868, are hereby repealed; provided, that no proceedings had under any law repealed by this act shall be affected by such repeal, but all further proceedings shall be under and in accordance with the provisions of this act.

SEC. 28. This act shall be in force from and after its passage.

Passed April 12, 1871.

AN ACT to amend section sixteen and repeal section seventeen of an act entitled "An act relating to Ditches," passed April 12, 1871. (O. L., vol. 68, page 60.)

SECTION 1. *Be it enacted by the General Assembly of the State of Ohio*, That section sixteen of the above entitled act be amended so as to read as follows :

Section 16. For the purpose of keeping any ditch open and in good repair that is now or may hereafter be constructed under any laws of this State, any two of resident land owners through whose land said ditch passes, may make their statement in writing to the county auditor; said statement shall contain what repair they deem necessary, together with an estimate of the amount necessary to clean out and repair the same, on each tract of land through which said ditch runs, and shall set forth the necessity of cleaning out and repairing said ditch. Upon receiving said statement in writing as aforesaid, signed by any two of said resident land owners, the county auditor shall forthwith appoint one disinterested freeholder of the county through which said ditch passes, who shall be sworn to go upon the line of said ditch and examine the same carefully, and make his report in writing to the county auditor, fixing the amount that each land owner should contribute to make the repair of said ditch, according to the benefits derived; also, the amount of work each land owner should be required to perform in repairing said ditch. Upon receiving said statement in writing, of said disinterested freeholder as aforesaid, the county auditor shall forthwith notify the owner or owners of said tracts of land through which said ditch runs, or their agents, so far as their residence is known to said auditor, directing him, her, or them to clean out and repair said ditch through his, her, or their said tract or tracts of land, within six months from the date of said notice; said notice to be in writing, and sent to said owner or owners by mail or otherwise. But if the residence of the owner or owners of any such tract of land, or of his, her, or their agent, is not known to the auditor, it shall be the duty of the auditor to cause to be posted up in at least three of the most public places in the township or townships in which said ditch may be located, written notice of the time required for the cleaning out and repair of said ditch, with the amount that will be levied against said tract or tracts of land. If the said ditch shall not be repaired within the time specified, immediately after the expiration of said six months the county auditor shall appoint some disinterested person, a resident of the township in which said ditch or some part thereof is located, to examine said ditch and determine whether it has been cleaned out and repaired as directed in said notice. Said person so appointed shall go upon said ditch and examine the same, and shall make his report in writing to the auditor; and if such report declare the ditch to be cleaned out and repaired to its original capacity, the owners of the land through which the ditch is so cleaned out and repaired, shall be discharged from further obligations under said application and notice; but if said ditch is not cleaned out and repaired to its original capacity on any of said tracts of land through which said ditch runs, then in that case the county auditor shall assess the amount estimated in said statement of said disinterested freeholder, against said delinquent tract or tracts of land, and collect the same as other taxes, and the county auditor shall forthwith give notice, and sell said cleaning out and repair of said ditch to the lowest bidder, according to the provisions of the act to which this is an amendment. The person appointed by the county auditor to examine said ditch shall be entitled to receive two dollars per day for his services, to be paid out of the county treasury, on the warrant of the county auditor. It shall be the duty of the county

auditor to file and keep in his office, subject to inspection, all the papers provided for in this section.

SEC. 2. That original sections sixteen and seventeen of the act to which this is an amendment, be and the same are hereby repealed.

SEC. 3. This act shall take effect and be in force from and after its passage.

Passed April 23, 1872.

AN ACT to amend sections twelve (12) and thirteen (13) of an act entitled "an act to provide for locating, establishing and constructing ditches, drains and water-courses in townships, and to repeal a certain act therein named." (S. & S., pages 326 and 327.)

SECTION 1. *Be it enacted by the General Assembly of the State of Ohio, That sections twelve and thirteen of the above mentioned act be amended so as to read as follows:*

Section 12. As soon as an appeal shall be perfected from the decision of said township trustees, all further proceedings before them on said petition shall be stayed; but if no appeal shall be taken, as provided for in the seventh section of this act, then it shall be the duty of said trustees, upon the expiration of the time specified by them for the opening of such ditch, drain or water-course, and upon being satisfied by inspection and view that any section or sections of the same have not been completed, to sell such work by such sections to the lowest bidders, by setting up written or printed notices of such sale in at least three of the most public places in such township, specifying the time when such work shall be completed; said notices to be posted up for at least ten days before the day of sale; and said trustees shall take such bond or other security for the performance of such work as they may deem proper: Provided, that before the work of constructing such ditch shall be sold by the township trustees, said trustees shall make a fair and impartial estimate of the cost of said work, which estimate shall be entered upon the journal containing a record of their proceedings; and said work shall not be sold for any sum exceeding twenty per cent. above said estimate; and said trustees shall also make a fair and just estimate of the amount of the costs made in all such proceedings, to be paid by each person interested in such proposed ditch, drain or water-course, and collect and pay out the same in conformity with such estimates; and they are hereby authorized to bring suit before any justice of the peace for the amount so assessed against any person; and the journal containing the record of their proceedings, or a certified copy therefrom, shall be prima facie evidence of such indebtedness. No order for the opening or sale of such ditch, or any part thereof, shall be made, until the full amount of such compensation for land appropriated shall have been paid.

Section 13. Immediately after the sale of any such sections or parts of sections, as provided for in the twelfth section of this act, said trustees shall certify to the auditor of the county the amount each section sold for, adding the proportionate amount of cost and expenses of such sale, together with a correct description of each piece of land; and said auditor shall place the same on the duplicate, to be collected as other state and county taxes are collected: Provided, however, that no such taxes shall be placed upon the duplicate, until said work be completed to the satisfaction and acceptance of said trustees, and that fact certified to the auditor by said trustees. As soon as such work shall be completed in conformity with such sale, and to the satisfaction of

said trustees, said trustees shall certify the amount due to each person to the auditor of the county, and said auditor shall draw orders for the payment of such amount out of the county treasury: Provided, that any person interested may pay the amount of the purchase money and proportionate share of cost and expenses as aforesaid, to said trustees, at any time before the same are charged on the duplicate, to be paid by said trustees to the purchaser of such section or sections respectively.

SEC. 2. Original sections twelve and thirteen are hereby repealed.

SEC. 3. This act shall take effect and be in force from and after its passage.

Passed March 13, 1872.

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Trees and Shrubs of Massachusetts.....	1
The Forester.....	1
The Trees of America.....	1
The Cincinnatus.....	5
The Plow, Loom and Anvil.....	1
The Farmer's Land Measure.....	1
The American Poultry Yard.....	1
The Philosophy of the Weather.....	1
The Vine Dresser's Manual.....	1
The Gardener's and Farmer's Reason Why.....	1
The Rabbit Fancier.....	1
The American Gardener.....	1
The Progressive Farmer.....	1
Transactions of the American Institute.....	17
Transactions of the Michigan State Agricultural Society.....	12
" " Illinois " ".....	7
" " Wisconsin " ".....	6
" " New York " ".....	28
" " Kentucky " ".....	2
" " Massachusetts " ".....	19
The Geological Observer.....	1
Tull's Horse Hoeing Husbandry.....	1
The Complete Grazier (Youatt).....	1
The Shot Gun and Sporting Rifle.....	1
The Cottage and Farm Bee Keeper.....	1
Talpa.....	1
The Farmer's Library.....	1
The Cultivator.....	30
The American Agriculturist.....	6
The Working Farmer.....	1
The Year Book of Facts.....	26
The Farmer's and Planter's Cyclopaedia.....	1
The Modern Horse Doctor.....	1
The American Turf Register and Racing Calendar.....	1
The Game Fish of the North.....	1
The Culture of Fruits and Vegetables.....	1
Traite des Magnaneires.....	1
Ure's Dictionary with Supplement.....	2
United States Sanitary Commission Bulletin.....	3
Walks and Talks of an American Farmer in England.....	1
Wallace's American Trotting Register.....	1
" " Stud Book.....	1
Wailes' Agriculture and Geology of the Mississippi.....	1
Weeks on Bees.....	1
Wohler's Hand Book of Inorganic Analysis.....	1
Wisconsin Farmer.....	1

	No. of Vols.
Young's Agriculture of Lincoln	1
" " Suffolk	1
" Survey of Essex	2
" Agriculture	26
" Tour	2
Youatt and Martin on the Hog	1
Year Book of Agriculture	1
Youatt and Martin on Cattle	1
Year Book of Agricultural Facts	4
Jahresherichte Naturforschenden Gesellschaft in Emden	1
Jahresherichte Vereins	1

Mr. James Buckingham, Treasurer of the State Board for several years, and President in 1872, kindly presented the Board one copy of vol. 3 of the American Devon Herd Book, and also the 15 volumes of the American Turf Register.

There are many volumes of serials, not bound, which are not included in this list. Neither are the foreign exchanges, unbound, included. A fire occurred in the rooms occupied by the State Board in the State House, caused by a piece of pine wood having been substituted for brick by the builder of the register, by which fire several hundred volumes of bound books and several hundred volumes of exchanges were destroyed.

APPENDIX.

FIFTH ANNUAL REPORT

OF THE

OHIO STATE HORTICULTURAL SOCIETY,

FOR THE YEAR 1871.

OFFICERS OF THE SOCIETY FOR 1871:—*President*, DR. J. A. WARDER, Cincinnati; *Vice President*, G. W. CAMPBELL, Delaware; *Secretary*, M. B. BATEHAM, Painesville; *Treasurer*, DR. J. W. DUNHAM, Collamer.

Members of the Ad Interim Committee, with the above Officers:—D. C. RICHMOND, Sandusky; L. WELTZ, Wilmington; W. F. HEIKES, Dayton; N. L. WOOD, Smithfield.

[For List of Officers and Members for 1872, see last page.]

SUMMER EXCURSION OF THE SOCIETY, AMONG THE VINEYARDS OF CUYAHOGA AND LORAIN COUNTIES.

The annual excursion of the society, for the inspection of vineyards, was held August 8th, in accordance with a published programme, and embraced all the principal vineyards along the lake shore in Cuyahoga county, from Euclid Ridge and Collamer, at the east, to Rockport and Dover Bay at the west, including not less than a thousand acres of bearing vines. The weather was delightful, and most of the vineyards were

in fine condition, with the prospect of a very abundant crop of fruit. In fact the common belief was, that the vines were too heavily laden for the crop to ripen perfectly and not injuriously affect their health.

The party assigned to the eastern portion of the territory to be inspected, consisted of the Secretary of the Society, the Treasurer, a chaplain, and quite a number of experts. They commenced their pleasant labors early in the morning, on the bold northern summit of Euclid ridge, where is the finest view of lake and landscape to be found in Northern Ohio, and here a veteran grape-grower, Louis Harms, formerly of Put-in-Bay, has a most promising vineyard of fourteen acres—Delaware, Norton's Virginia, Ives, Concord, Catawba, and other varieties, four and five years old, and laden with fruit in the most healthy condition, some of it beginning to ripen. Adjoining this are the vineyards of E. P. Haskell and H. Avery, five or six acres each, mostly Catawba, and all quite healthy and fruitful.

The soil of this ridge is a strong clayey loam, abounding with shale, affording the best nutriment for grape vines, while the elevation, exposure and dryness secure exemption from the diseases incident to low and level localities.

This ridge extends through Collamer, and along its beautiful slope. The party visited next the vineyard of R. P. Vorce; eight acres Catawba, Concord and Delaware five years planted, in fine condition and fruit abundant. Then that of Mrs. Dille & Sons, six or eight acres, also bearing a fine crop, though not so well trained and cultivated.

Then going a mile or so southward and passing several vineyards, we came to that of Dr. Dunham, the Treasurer. Part of this was planted some fourteen years ago, and has been noted for the uniform ripeness and excellence of its fruit, (Catawba) and the younger portion, higher up the ridge, though not as yet so luxuriant in growth, is equally healthful, and as productive, for its age. Here, too, Mr. Searls has a very promising and productive vineyard, well cultivated and bearing a fine crop of Catawba, Concord and Iona—the last more than usually thrifty and beautiful.

The vineyard of George Leick, about twenty acres, deserves special attention, on account of the large number of varieties of grapes it contains. Along with Catawba, Concord, Ives, Norton and Delaware, are long trellises of the various numbers of Roger Hybrids; also Martha, Black Hawk and many others, most of them growing and bearing well, but some of the Rogers especially showing a little mildew or rot. The vineyards of Messrs. Saxton, Hall, McCroskey, and several others at Collamer, were visited by a portion of the party, and reported as being in good condition, with the prospect of an abundant crop.

Passing rapidly through the city to the west side, and thence by the

Rocky River Railroad, three or four miles, we stopped at the grounds of Messrs. Marshall & Lower, and were soon joined by a party who had come from Dover, and some from Avon Point in Lorain county, having been appointed by the society to inspect the large vineyards in those sections. Dinner was generously furnished to the visitors at the houses of Captain Spalding, S. B. Marshall and Lower, and free tickets were given to all by the railroad company.

After dinner the number of visitors was increased by parties arriving from all directions, and by advice they divided off in companies, and all found pleasant and instructive occupation in visiting the numerous vineyards and fruit-gardens along the "Detroit Road" and lake shore for a couple of miles.

Among the best of these are the grounds of S. B. Marshall, embracing a fine young pear orchard, laden with fruit, as well as a couple of small vineyards in a fine state of bearing, and exhibiting many varieties, some of them quite new. Mr. Lower has a very thrifty and productive vineyard adjoining, but his chief attention is given to a milk dairy. Captain J. Spalding has a large vineyard, consisting of many varieties, and mostly in fine condition, promising a full crop of fruit.

The grounds of Mr. F. R. Elliott were very attractive, owing to the number of quite new grapes and other fruits which he is testing, and were shown to the visitors. The vineyard of J. A. Harris & Sons, on the lake shore, was inspected with much interest, owing to the large number of varieties it contains, and the excellence of the samples of grapes exhibited by him at the State Fairs. Regret was expressed that Mr. H. was not present, and much commendation of the location and culture of his vineyard and the health and productiveness of the vines—as was also the case with the vineyard of Mr. Brooks, and a number of others in the neighborhood. The greatest fault noticed here and elsewhere this season is that of allowing too heavy a crop to remain on the vines, especially where the growth is not very thrifty, or the age sufficient to allow of the ripening of such burden without injury.

One party of visitors took a drive westward to the grounds of the Hall Brothers, where, besides many acres of raspberries, strawberries, etc., is a promising young vineyard of five or six acres close on to the lake shore, the soil and location like that of Mr. Harris. Nearly adjoining, are young vineyards belonging to Collins French and Mr. Hall, which are doing well. But all of these will be likely to need some more of the drain tiles which are made in abundance on the premises. Southward a mile or so, away from the lake, is the beautiful vineyard of Mr. Colborn, six or eight acres of full bearing age, mostly Catawba and Concord, and a model of neatness in culture and training. But from some cause not

easily discovered, the fruit shows considerable rot and mildew, especially where the vines are the most thrifty and the soil a little moist.

At the residence and grounds of Prof. Kirtland, all naturally found much gratification, especially in seeing this venerable and much esteemed pioneer of horticulture, apparently in good health and spirits, and enjoying, as ever, a lively chat with old friends among his acres of beautiful trees, flowers and fruits.

At half-past five o'clock the company took the cars again, and a short ride landed them at the spacious Cliff House at Rocky River, where a sumptuous entertainment was provided for the guests, numbering about one hundred, by the fruit growers and other citizens of Rockport township, especially the residents of the Detroit road.

A public meeting convened in the ball room up stairs for an hour before the supper, with G. W. Campbell, Esq., Vice President of the State Horticultural Society, in the chair. Regret was expressed that Dr. J. A. Warder, the popular President of the Society, was absent, being on an excursion to Colorado. Reports were made respecting the condition of the vineyards and prospects of the grape crop in the different sections visited by persons present.

Mr. B. W. Johnson and Mr. E. Boyd reported for Lorain county that the crop at Sheffield, Avon Point and Dover Bay, like most other places of the shore, was very abundant, and more free from disease than ever before known at this time, the only danger being from an excess of fruit on vines. Mr. Lowry, of Berlin, gave a similar report for Erie county, and said the Iona and other new varieties, as well as the old standard sorts, were doing well.

Col. Richmond of Sandusky, being obliged to leave before this stage of the meeting, sent a report to the Secretary as follows:

AT AVON POINT.—According to instructions, I proceeded to Elyria on the 9th of August; whence, through the politeness of McClellan & Son, Mr. Lowry and myself were kindly conveyed to Avon Point, where we had the pleasure of seeing about two hundred acres of vineyards in full bearing, with a remarkably fine crop of Catawbas, which promised to be of superior quality. Scarcely any leaf mildew was seen; none at all in many vineyards. Foliage on all varieties remarkably healthy, with very little rot to be found, and none at all in many vineyards. Fruit quite forward. I found, on inquiry and from the general appearance of the soil, that they had not in this section the heavy rains we had experienced at the islands and the vicinity of Sandusky early in August, which injured our vineyards.

Avon Point extends well out into the lake, which makes it a favorable

location for the vineyard. The soil may be called a rather poor, stiff clay with a level surface, requiring to be well underdrained to make good vineyard land. The people understand this matter, for they generally underdrain this level land before attempting to set out a vineyard. This, I think, with the favorable location, is the secret of their success. The vineyards were very well cultivated. The vines generally trellised, and all trained on the renewal system, mostly in good order; summer pruning well done. In some cases too much wood is left, and vines overbearing, a fault common in this country, but well understood in Europe, where they have had so much more experience, and know better than to let their vineyards overbear.

H. Moore's vineyard was worthy of notice, from the fact of his good judgment in thinning out his grapes, leaving the vineyard in good order for next year's crop.

DOVER BAY.—On the next day we proceeded to Dover Bay, passing many fine vineyards on the road. Stopping at the Dover Bay Company's large vineyard (their agent absent) we found it in fine order, well trellised and under good cultivation, but with more or less leaf mildew on most varieties; even the Clinton being troubled both with rot and mildew, which is very remarkable. There was a little rot among the Catawbas, in places.

This general overbearing, I think, will result in great injury to the vine, especially on this kind of soil. Probably this vineyard has been injured before in this way. Although the location is favorable, the soil appears in places to be rather too sandy for some varieties. This company has considerable new vineyard not yet in bearing, which looks thriving and shows good management.

J. Cahoon cultivates a large number of varieties, some of them of superior quality. He is a beginner, and, like most of that class, has left too much wood, and his Catawbas were overbearing badly. The crop of grapes was immense; they cannot ripen well, and must injure the vines. The location and soil are both good, but not sufficiently underdrained.

Mr. Weltz, of Clinton county, reported that the grape crop was almost a failure in the southern part of the State, owing to the injury done to the vines by the severe frost on the 22d of April, and the rotting of the fruit since. In some localities, the Delaware and Ives varieties especially were showing fair crops in the central and southeastern counties.

The Secretary said he had recently visited quite a number of vineyards along the lake shore eastward as far as Dunkirk and Fredonia, and found the vines generally healthy and bearing an immense crop of fruit, with a little more of mildew and rot than in this section, but not enough to materially lessen the crop. He also had received from Lockport and

Hammondsport, N. Y., similar reports of the grape crop in those sections, but time would not allow of their being read.

DISCUSSION ON NEW VARIETIES

then occupied a little time, but did not elicit much that was worthy of reporting. Mr. Elliott hoped the speakers would mention the condition of such of the new varieties as they possess, or have seen in bearing. He spoke favorably of the Walter, Croton, Iona, Eumelan, Alvey, and a number of other new sorts, but advised no one to plant largely of them till more could be learned as to their habits of growth, etc.

A call to supper caused a speedy adjournment, and closed up this part of the exercises. But the excellence of the repast prompted a vote of thanks to the good people who provided it, which was carried by acclamation.

See remarks by Mr. Campbell, and reports of the grape crop in Erie county, and on the Islands, in the proceedings at the annual meeting, a few pages onward.

FRUITS AT THE NORTHERN OHIO FAIR.

At the Northern Ohio Fair, in Cleveland, Sept. 13 to 15, there was a fine show of fruits, mostly the products of the lake shore; but owing to the rule of the association preventing exhibitors from putting their names on the dishes, for fear of biasing the judges, it was difficult for any one to learn from whence they came; and as no authentic report of the award was published, the exhibitors got little credit for their fruits and labor. The fair was a little too early for the perfect ripeness of grapes, as the season was rather cool. Still the display of this fruit was remarkably fine. Of pears, too, there was a very fine show, mostly from the vicinity of Cleveland. The finest apples were from Lucas and Wood counties—and the best peaches from Lake county.

THE OHIO STATE FAIR.

This was held at Springfield, Sept. 26th–28th, and owing to the liberal premiums offered for fruits, and the special efforts of members of this society, there was a larger and better display of fruits than was ever before seen in Ohio; although the season was not generally a favorable one, especially for apples and peaches, and the weather at the time was uncomfortably cold and rainy at the first. All the tables in the large hall were densely filled, and much fruit brought for exhibition was not unpacked for want of room.

The number of plates or dishes of fruit upon the table was nearly three thousand—as follows :

1,920 plates of apples ; 320 plates of pears ; 100 plates of peaches ; 350 plates of grapes and 40 baskets of quinces, apples and pears, besides numerous barrels, boxes and baskets, that were not unpacked for want of room on the tables.

The apples were mostly of fine appearance, especially those from the southwestern portions of the State, where the crop was better this year than usual, and the winter varieties ripen earlier than in the more northern sections. The most extensive collections of apples and pears were from the northwest, but many of the finest lots were grown in the central and southwestern sections, as will be seen by the premiums awarded.

The display of grapes was not so remarkable for the amount as for the excellence of the fruit, and the large number of fine varieties. Almost every one of the new varieties that have been described and disseminated as deserving of cultivation, was to be seen on the tables. Most of the large collections and finest specimens of grapes were from the lake shore vineyards in the counties of Erie, Lorain and Cuyahoga.

Mr. J. A. Harris, of Cleveland, took the largest number of premiums. L. W. Todd, of Berlin, and — Cahoon, of Berlin, were also successful competitors. The finest display of pears was by S. B. Marshall, of Cleveland, but many others also gained red cards with their fruit. The time of the fair was too late for a good show of peaches, but Mr. Bateham, of Painesville, exhibited fifteen varieties, and took the largest share of premiums. Mr. H. G. Tryon, of Willoughby, had a dozen varieties, and received the next honors.

An exhibition of fruits, vegetables, grain, etc., from Kansas, was a very attractive feature of the show in the fruit hall, and reflected much credit on this young State, which seems likely to outstrip most of the sisterhood in rapidity of settlement and development.

A meeting of the State Horticultural Society was held as usual on Wednesday evening of the week of the Fair, and quite a variety of new grapes and other fruits were examined and discussed, but nothing really new or of special interest was elicited. The new varieties which were presented for premiums or for examination, were either not new or not in proper condition, or had not been sufficiently tested for their character to be correctly judged, or else they were deemed unworthy of commendation.

Several items of business were taken up and disposed of ; among them the reception of invitations for holding the annual meeting of the Society in December. Invitations were given for Zanesville and for Milford, but

some of the members express a wish that the meeting might be held at Mansfield, Massillon or Mt. Vernon, or some other central place where a meeting of the Society had not been held, and thus the people would be made acquainted with the Society and its work. But in the absence of any invitation from such towns, the one from Milford seemed to find the most favor, and after some discussion the matter was left in the hands of the officers of the Society for them to arrange the place and time of meeting and send a programme to the members. President Warder announced that he should necessarily be absent from the State during the month of December; whereupon it was resolved that the annual meeting be held the latter part of November.

Adjourned.

ANNUAL MEETING OF THE SOCIETY, HELD AT MILFORD, CLERMONT COUNTY, NOV. 22D, 23D, 24TH, 1871.

Clermont county embraces over ten thousand acres of orchards—apple and peach—and hundreds of acres devoted to berries and other small fruits; hence, as was expected, there was a large attendance of practical fruit-growers at this meeting, although the number of persons from distant parts of the State was not large.

The meeting was held in the hall of the handsome new school building, which was tastefully decorated for the occasion by the citizens. At 11 o'clock, A. M., president Warder, called the assembly to order, and the following committees were appointed for the meeting:

On Business—G. W. Campbell, of Delaware; W. J. Townsend, of Zanesville, and Thos. Paxton, of Loveland.

On Membership—Thos. K. Biggs, M. N. Megrue and Wm. E. Mears.

On Fruits—L. Weltz, Wilmington; James Edgerton, Barnesville; N. Ohmer, Dayton, and L. Finch, Indian Hill.

On Vegetables—D. C. Richmond, Sandusky; F. Gatch, Milford, and J. W. Mumma, Montgomery county.

On Nominations—Judge Phillips, Berlin; Dr. Scott, Chillicothe; W. J. Townsend, Zanesville; J. M. Gatch, Clermont county; and Leo Weltz, Wilmington.

After a little time devoted to general conversation, the Business Committee reported that the programme for the afternoon of that day would be: Report from the Secretary of the doings of the Society since the last annual meeting; reports from delegates to meetings of societies in

other States ; reports from local societies in Ohio. In the evening would be the annual address of President Warder, with other speeches, &c.

AFTERNOON SESSION.

Secretary Bateham made a report of the meetings and doings of the Society for the year, speaking of the summer meeting and excursion among the vineyards and orchards of the Lake Shore ; of the Northern Ohio Fair at Cleveland, and the State Fair at Springfield ; as already given in the preceding pages of this report.

Mr. G. W. Campbell, as delegate from this society to the meeting of the American Pomological Society, at Richmond, last September, and also to the meeting of the Pennsylvania Horticultural Society, the same month, made an interesting report, which will be found a few pages onward.

President Warder, by request, gave a brief account of a tour made by him to Colorado, the past summer, with a party of editors and horticulturists.

Prof. Orton, of the State Geological Corps, being present, and not able to remain till another day, by request, favored the meeting with a half hour's lecture on the soils of Clermont county. His remarks were full of interesting facts and suggestions of practical value, and were listened to with marked attention. He was requested to write out the substance of his lecture for publication in the transactions of the society, but most of it is contained in his essay on soils, given in the Agricultural Report, of which this is an appendix.

Reports of Local Societies and Ad Interim reports from members of the committee, occupied the remainder of the afternoon. Most of these will be found a few pages onward.

Adjourned till 7 P. M.

EVENING SESSION.

The large hall was well filled in the evening, a large portion of the audience being composed of ladies.

The exercises began with a song from the Milford Glee Club, followed with prayer by Rev. Mr. Warnock, of Milford.

After another song, there was an address of welcome by Rev. T. J. Melish, of the Journal and Messenger, Cincinnati, a resident of Milford.

We have room only for the following extracts from this admirable address :

ADDRESS OF WELCOME.

Mr. President and Members of the Ohio State Horticultural Society :

LADIES AND GENTLEMEN :—I esteem it both an honor and a pleasure to have been chosen by my fellow-citizens to present to you their hearty welcome to Milford, and to join with them in saying that we feel that you have honored us in coming. We consider your Society one of the most beneficent agencies in promoting the temporal happiness of mankind. It has been said that he is a public benefactor who makes two blades of grass to grow where one grew before. Certainly in a much higher sense are they benefactors, who fill our houses and gardens with beautiful flowers, and load our tables with luscious fruit.

Your circular states that in selecting Milford as the place of your meeting, you deemed it fit because Clermont county, and especially Miami township, in which you now are, is among the finest fruit regions in the State of Ohio. This is pre-eminently so. You are to-night on the border of one of Ohio's most beautiful gardens. Miami township, which stretches from the East Fork, south of Milford, up to Loveland, and back some five or six miles from the Miami river, is the favorite home of the peach, that *chef d'œuvre* of nature, in which she exhausted all her skill and left no more behind. Past this school house, night and day during the season, goes a perpetual procession of loaded wains, filling the air with delicious fragrance. Mr. Jacob Wainwright, one of our practical and largest fruit growers, told me that in one year he had sold more than one hundred thousand fruit trees, the greater part of which has been set out in this township.

* * * * *

I came out here nearly six years ago, a city editor and business man, with blood carbonized by Cincinnati smoke, with nervous system depressed, appetite nearly gone, brain energy acting fitfully, like a lamp whose wick scarcely touches the oil ; in short, looking onward, with Christian resignation, to joining the innumerable caravan moving to the pale realms of shade, at no distant day. After trying the virtues of homeopathic pillules, eclectic tonics, and allopathic drastics, the good doctors, sensible at last, suggested country air. I came, saw, and conquered health, oxygenated my blood, and restored nervous energy. So, on the whole, I agree with the man who said : "Man made the town, God made the country." I thank God for the country.

After relating in a very humorous style, several of his failures in horticultural affairs, the speaker concluded as follows :

But, after all, it is a good thing to live in the country ; to get outside of the city's smoke, where you can breathe the fresh oxygen, as it comes pure and sweet from God's own laboratory ; to come into daily communion with nature ; to be obliged to get up early in the morning to make the train, and so behold the grandest sight of all, the golden glories of the morning, when

"The trembling pulses of the dawn
Fill with faint gold the violet skies,
And on the moist day-smitten lawn
The peace of morning lies."

And what comparison is there between the songs of imprisoned birds in painted city cages, and that magnificent choir of feathered songsters which make our summer woods ring with celestial melody ! when

"From Nature's old cathedral sweetly ring
The wild-bird choir—bursts of the woodland band
Who 'mid the blossoms sing ;
Their leafy temple, gloomy, tall, and grand,
Pillared with oaks, and roofed with Heaven's own hand."

Happy are we, when from the city's smoke and dust, we have the country to go to.

The Emperor Diocletian was a true philosopher, when, after a prosperous reign of twenty-one years, he voluntarily laid down his scepter and retired to a country garden. When his affectionate people sent a deputation to him to come back to Rome and resume the throne, "Ah, gentlemen," said he, "you have not seen my cabbages." The quiet peace of the country was a balm to a spirit harrassed for twenty-one years with the cares of state.

Gentlemen, you have a noble mission. We greet you as the best friends of the best place in the world—the country. If we honor the architect whose genius rears the noble city edifice for the use of man, or for the worship of God, much more do we honor you, who are workers with God in beautifying His great temple, and making it more declarative of His glory and worthy of His praise.

PRESIDENT'S ANNUAL ADDRESS.

After another song had been sung, the President of the Society, Dr. J. A. Warder, delivered the annual address. He spoke as follows :

FELLOW MEMBERS :—Time, with unwearied flight, has again brought us, with proverbial certainty, to the period of his annual cycle when we are wont to assemble ourselves together for consultation as to our horticultural progress. True, the full year has not run out all his sands since

our last agreeable meeting at Urbana; but this snow storm may be accepted as an approving smile from old Boreas.

For sufficient reasons, the Executive Committee have anticipated the date of our annual meeting this winter; yet for all practical purposes, we may consider that a year has elapsed since last we met. How has it been passed? With what results, what failures, what successes? What advances have we made? What losses have we sustained? Where are the absent ones?

* * * * *

Let us endeavor to answer. After a late and mild autumn, and exceedingly mild winter, (except a week in December, which enabled us to fill our ice houses,) and with the soil yet dry from the effects of the previous summer's drouth, we could plow in January, and yet vegetation was not at any time started in our plants so as to cause winter-killing in the cold and backward spring that followed. With the open winters and changeable temperature of this latitude, it is rare that our fruit buds so completely escape injury from winter frosts, and that we have such an abundant bloom in our orchards, which seemed to have made an unusual provision of blossom buds as a result of their diminished wood growth and of the perfect ripening of the previous year. This must have been noticed by those who cut scions for grafting, from bearing trees, the past season, and was very apparent at the time of blossoming, in the spring, when our orchards were most beautiful to behold with their fullest bloom.

Just then came one of those sad intruders and cruel disappointments to the fruit grower, a late spring frost, which swept away our hopes, over a considerable extent of country, killing all the blossoms on the lower grounds up to a very definite line of elevation, the frost line, above which the cold was less severe, and the fruit trees escaped. Not so fortunate were the strawberries, upon the surface of the ground; they were destroyed extensively. Later in the season, at the time of ripening of this first and most welcome of our summer fruits, the crop was seriously damaged by pinching drouth, that seriously affected those which had not been mulched, or which were planted on arid soils. The markets were well supplied, nevertheless, and prices were not higher than usual.

The next fruits were more fortunately provided with favorable climatic conditions; raspberries and blackberries having escaped the frost, and withstood the drouths of May, received the benefits of fine showers as they came to the period of ripening, and their crops were very fine; so that deficiency of the strawberry fields, to which reference has been made, was fully compensated by the abundant production of the other berries.

Following the drouths of May came pleasant and acceptable showers, most welcome to the growing crops, but in many places disastrous to the grape, then in its tender state, which took on the trouble known as the brown rot, that in some vineyards destroyed all the fruit, even of such hardy sorts as the Concord, Hartford and Clinton, while most of the more delicate kinds suffered equally.

The long continued drouths of midsummer and early fall, which prevailed over a wide extent of country, had an effect upon orchard fruits particularly, in causing premature ripening. It has been a most common remark the past season, that fruits have anticipated their time of coming into the market, and this was very manifest at our fruit exhibitions where it was often found quite difficult to arrange the fruits to meet the requirements of the premium lists. This was particularly the case with apples and pears; the winter varieties would ripen and intrude upon the domain of those known as fall fruit, while they, in turn, had ripened and disappeared when it was yet summer. At Cincinnati, the Maiden's Blush, Ashmore, Western Beauty, and others well known as fall apples, were sent to market in July and August.

This premature ripening has run through the whole crop of apples and pears, and no little inconvenience has been experienced by producers and shippers, who based their calculations on their previous observations as to the period of maturing of fruits.

INSECTS.

Many of these pests, and some that have been heretofore most injurious to our fruits, have been less numerous and injurious than for some years past. This has been particularly remarked as to apples and pears, which are very much smoother and more perfect, especially in this quarter of the State, where for some years orchardists have been discouraged on account of the inferior quality of their fruits.

There seem to be cycles of increase of these destructive insects, and then periods when, from natural causes, they are diminished. These causes may be atmospheric in occasional instances, and consist in late frosts, cold rains, &c.; there may be prevailing maladies that affect whole genera of insects; but the close observer will inform you that, in the majority of cases, the diminution of any of these destructive pests depends more upon the ravages of some parasite or cannibal insect, the increase of which has been favored by abundance of its favorite food—illustrating the wise provision for the preservation of the balance of power in the scale of creation. He who doth all things well; He who careth for the meanest or least of his creatures, thus kindly interferes for our benefit. Whenever one race of depredators becomes too numerous for our comfort,

another species, fitted especially to consume them, being encouraged by an abundant supply of food, is rapidly increased, and keeps our annoying visitor in check more satisfactorily than we can do with the exercise of all our vaunted intelligence and power.

This suggests one serious difficulty in the treatment of insect pests. We may attack them broadside, and overwhelm them by poison; we may use strategy, enticing them into our traps; we may call the birds to our assistance, but in all cases we are liable to destroy our insect friends also.

Upon previous occasions your attention has been frequently called to the vast importance of a knowledge of insect life, and to the necessity for the appointment of a person qualified to give us the information necessary to enable us successfully to combat these pests. To those suggestions you and your friends all over the State have nobly responded with thousands of names attached to the petitions prepared for you; these were presented to the Legislature, but nothing has been done by our governors—we have been left to our own resources, or to await the results which we fondly anticipate will flow from an enlightened course of *industrial education*, at our Agricultural and Mechanical College, an institution in which this Society takes the deepest interest.

We have great cause for thankfulness that, in spite of winter's cold and summer drouths, of spring's frosts, of mildew's blight and insects' inroads upon our favorite fruits, we still have had bountiful harvests of most kinds of these delicious and healthful products of the soil.

While this result may have contributed to the greatest good of the greatest number, and enabled the poorest citizen to partake freely of these luxuries, the diminished price attendant upon so large a production of perishable material has caused the returns of cash to the producer to be proportionately small. In the inverse ratio to the success of the crops, must be the size of the income, which, in many cases, was not sufficient to cover expenses. In this we must not find a cause of discouragement, but we shall be forced, by such results, to have recourse to greater skill, to a stricter economy, and to a more enlightened course of horticultural practice, selecting only the finest fruits, such as will command the highest price, if we desire to reap an ample reward for our labors; or to confine our plantings to such prolific and hardy kinds as will enable us to survive the low rates of the overcrowded market.

* * * * *

William Parry, of New Jersey, reports that six acres of strawberries yielded him \$7,000. They were sold as high as sixty cents a quart in Philadelphia when they first appeared, and did not fall below twelve and a half cents at any time during the season. Our rates are much less.

Garden products continue to receive their deserved attention near the great cities, and from such centers immense quantities are transported to all the interior towns; but we fear our Society has yet much to do in their behalf, encouraging their production more generally and more liberally in the farmers' truck patches, as it was suggested we should do at our last meeting. Floriculture, by and for the million, also needs encouragement, and will no doubt receive a valuable impetus at this session, when it will be presented for your consideration by our worthy Secretary.

The Agricultural and Mechanical College, an institution for the early establishment of which this Society has earnestly labored and begged, and from which we may reasonably hope to derive much benefit in future years, is at length in a fair way of being carried into execution. The land has been purchased and the buildings are under way, so that we may hope to see its halls opened for claimants of industrial education within the coming year. I am happy to inform you that the Board of Trustees have considered a broad and liberal course of study for the future pupils, and we must hope they may be successful in selecting an able corps of practical teachers in the institution of the New Education from which we hope and expect so much.

After the addresses, some time was again devoted to reports from local Societies. Dr. D. H. Scott, of Chillicothe, gave the following as a report of the

ROSS COUNTY HORTICULTURAL SOCIETY.—Prior to the organization of the Ross County Horticultural Society, in 1869, comparatively little interest had been manifested in our community in Horticultural pursuits. Various circumstances had combined to make our rural population almost exclusively, in taste and by occupation, Agricultural.

A few, however, scattered here and there throughout the county, were found, who appreciated the superior advantages of our situation, and the peculiar adaptation of our soil and climate to Horticultural purposes.

As a means of mutual instruction and of cultivating a taste in the community for Horticultural pursuits, a County Horticultural Society was organized, which, for the most part, has been well sustained up to the present time.

Meetings are held monthly, or semi-monthly, for the exhibition of horticultural products, and the discussion of the various topics interesting to the practical Horticulturist.

Committees appointed to investigate particular subjects, report from time to time, and their reports, together with the regular proceedings of the Society, are published in our county papers.

Having a small surplus in the treasury, and our expenses being nominal, the annual fee for membership has been appropriated, the past year, to the procuring of Agricultural and Horticultural periodicals for distribution among our members.

By these means, and by our annual Fairs and Horticultural and Floral exhibitions, a general interest has been awakened in horticulture throughout the county.

The value of our hill lands, which comprise a large proportion of the area of our county, has been materially enhanced.

Under the auspices of our society, also, a successful Agricultural Society has been organized; the two societies uniting in an annual Agricultural and Horticultural Fair.

In conclusion, I may say, that the future prospects of our society are highly encouraging; and in view of the work already accomplished, may we not reasonably hope, soon, to make Ross county as famous for the extent, variety and excellence of its Horticultural productions, as it long has been for its wealth of Agricultural resources.

MONTGOMERY COUNTY.—Mr. N. Ohmer, of Dayton, gave a spirited report of the Montgomery Co. Society, which had been quite active and useful for the past two or three years—the members and people generally taking a lively interest in the meetings, which are held monthly at the houses and grounds of different members, and afford a great deal of social pleasure as well as useful instruction. They also have one or two excursions during the summer to give variety to their doings. Last summer, the visit of the society to Richmond, Ind., and the return visit of the society of that place, will long be remembered as very delightful occasions. The main features of their meetings, etc., were learned from the Erie Co. Society of this State and the Alton Society of Illinois. A report of each meeting, made out by the Secretary, is published in the city paper, and then printed separately for the use of the members in such form that at the end of the year all can be bound together, making a full report for the year. The cost of printing is five to seven dollars monthly, and we consider the money well expended.

ERIE COUNTY.—Col. Richmond, of Sandusky, reported that the Erie Co. Society was a live institution, and he thought it was doing much good, not only in improving the taste and increasing the knowledge of the people, but in affording the members and their families much recreation and social enjoyment—things very much needed among the farming people of this country. The meetings of the society are held monthly, in different townships, at the houses of the members. The attendance varies from fifty to two hundred, and about as many women as men. A good dinner

is provided, and after the grounds, etc., have been inspected, speeches, essays and discussions fill up the time. It was formerly the practice for the household where the meeting is held, to furnish the dinner, but as the society increased in numbers this was too great a burden, so now it is the rule for each family to carry a basket of provisions and make up a regular pic nic dinner. A full report of each meeting is published in the county paper.

Once each summer the society (in connection with the county agricultural society) have a grand steamboat excursion to the islands. This commonly requires two steamboats, and embraces a thousand or more persons. There is a township horticultural society at Berlin, acting in entire harmony with the county organization. Col. B. thought there might be one or two more such societies organized with advantage in the county, and in many other counties of the State.

Secretary Bateham said the modesty of the last speaker prevented his telling us that the Erie Co. Society had recently elected their president to a seat in the State Legislature. He was not sure, but this example might well be followed by other societies of the kind.

Mr. Ohmer said the Montgomery Society tried to do the same thing for their president, but did not have quite votes enough!

BERLIN TOWNSHIP.—Judge Phillips gave a report of the organization and doings of the Berlin Township Society. He said his township was largely devoted to fruit growing—grapes and berries as well as orchard fruits—hence many of the residents were practically interested in horticulture. They also had the advantage of a commodious town hall in which to hold their meetings, hence they did not often find it desirable to meet at the houses of members. They had good social dinners, however, at the hall, as some of the members of the State Society could testify, and he could corroborate all that Col. Richmond had said of the beneficial influence of such gatherings.

LOVELAND AND MOSCOW.—Messrs. Thos. Paxton and W. C. Pinkham, of Loveland, were called upon to report for the society of that place. They represented the organization as a beneficial one, though not as strong or efficient as some that had been spoken of. They thought it might and would be improved.

A similar report was given for the society at Moscow, on the opposite side of the county. The society at Milford did not seem to have any definite organization, but plenty of material for an efficient society, if the right man was found as a leader.

MUSKINGUM COUNTY.—Mr. W. J. Townsend, of Zanesville, said the Muskingum Society was alive and healthy, but they were a little vexed

with the State Society for not accepting their invitation to hold the present meeting at Zanesville. Hence there was a very slim delegation in attendance from there. He could say, however, that their society was working somewhat on the plan of the Erie county society, and some very good meetings had been held. He thought there would be more accomplished the coming year, and he hoped the committee of the society, if not others, would come to their meeting next June, if the season is at all favorable for strawberries, cherries and roses, and they meant to renew the invitation for the next annual meeting of the State Society to be held at Zanesville.

EASTERN OHIO.—Mr. W. K. Tipton reported for the Eastern Ohio Horticultural Society, embracing Belmont and Monroe counties. He said the organization was new, as yet, and had but few working members, but they had a wide field to occupy, in a good fruit-growing region, and he believed the coming year would show some progress in the line of work that has been spoken of so well here. He was convinced that these societies and meetings were calculated to greatly improve the people as well as the horticultural products of the State.

CLEVELAND.—Col. S. D. Harris and M. B. Bateham reported for Cuyahoga county—that the Cleveland Horticultural Society, as now organized, was composed mainly of professional gardeners, in the employ of wealthy citizens—some of the latter aiding as officers of the Society. That they did not have regular meetings, but held two or three exhibitions each year, mainly for the display of hot-house plants and other choice and rare products, and that the exhibitions of this kind had been exceedingly fine.

The East Cleveland Horticultural Society appeared to have suspended operations the present year, perhaps on account of the active land speculations in that section. The "Detroit Road Club" was thought to be alive, but it had not shown activity since last strawberry time, when the plethora of fruit probably put it to sleep for the season.

CLARIDON.—The Claridon Horticultural Society, in Geauga county, has maintained a quiet home-life for several years; and now that the people of that section are to have railroad connection with the rest of the world, its operations will, perhaps, be heard of occasionally.

CINCINNATI.—Dr. Warder, by request, spoke for the Cincinnati Horticultural Society. He referred to it as one of the oldest in the country, and that, if not of the highest standing, he claimed that it had done a great amount of good by the information it had diffused, not only in their own neighborhood but throughout the country. The Society had been in existence now for a quarter of a century. They first began by holding

monthly meetings, and some of their best papers and reports which have been published to the world were presented at meetings when but three or four members were present. These reports and papers were published and read all over the United States, and gave their society quite a reputation. Those meetings were kept up punctually, though sometimes only from three to five or eight members would be in attendance; they always had some papers read, and reports of their meetings printed and distributed. They are now, as they have been for years, meeting every week, and he believed they had been, and still were, accomplishing much good.

SECOND DAY.

Society met at 9 o'clock; spent an hour in examination of the fruits and vegetables on exhibition, was then called to order by the President. Mr. Campbell, of the Business Committee, announced *ad interim* reports and reports of committees would be the order of business for the forenoon; and he would ask Dr. Warder if he had any *ad interim* report to present. The Doctor responded briefly, as follows:

AD INTERIM REPORT.

After the damaging effects of the severe drought of the past summer, after several late frosts in the spring, causing a premature coloring and falling off of the apple crop, still we have a fair home supply of this king of fruits. The high coloring and premature ripening of many of the varieties of winter fruit shown on the tables, is owing to the drought of the past summer. Speaking especially of an apple from Parkville, Mo., he said it was noted as a long keeper, and called Park's Keeper.

BLACKBERRIES.

He said the Wilson continued to bear the palm, according to his observations, for earliness, size and profit. The Kittatinny is highly approved by amateurs for its flavor. The Missouri Mammoth has proved exceedingly unsatisfactory. Wilson's is first for profit. They brought forty and fifty cents a quart. Owing to their earliness, being first in market, and being so very large and fine, they command a good price. The Rochelle holds its own very well, except that they sometimes winter kill.

Simply referring to the failure of the peach crop, he next addressed himself to the subject of vegetables, noticing first some

NEW SEEDLING POTATOES,

Originated by George W. Campbell, of Delaware, Ohio, from the Early Rose. Three varieties were on exhibition, all of which promise well, but Mr. Campbell desires that they should be fully tested, before offered to the public. One which he names the Late Rose, has proved extremely vigorous in growth and productiveness, and of excellent flavor. He thought he had a big story to tell, as he had, from less than a half pound of seed, raised one weighed bushel, but he "knocked under" when his friend Richmond reported that from one potato he had raised three bushels, and his boys declared that they had been neglected, and that if well taken care of, they might just as well have had six bushels. The Peerless had done well, yielding $18\frac{1}{2}$ pounds to one pound planted. The Climax, though not new, and not generally known, is of excellent quality. The Worcester is regular in shape, with reddish skin, and when boiled is commended by epicures for its delicious flavor. The early Gulick, dry and mealy, was objectionable in the production of too many small ones. The White Peach Blow, he also regards as one of the best kinds before the public, especially for roasting or baking.

TOMATOES

Were next considered. It was difficult to tell whether to place them among the fruits or the vegetables. They had been placed on the fruit tables in the exhibition hall, but the committee on Fruits scornfully objected to their having a place there, and they were put among the vegetables. Their cultivation he thought to be one of the great triumphs of horticulture. Fifty years ago recognized only as love-apples—as curiosities of the garden—they are now one of the chief requisites of the table. Of the varieties, he called attention to four or five.

The Trophy tomato had been severely denounced in their Horticultural Society last Saturday at Cincinnati, yet he believed he could safely and conscientiously say it was one of the best varieties he had ever tested. They were almost without core, very solid, and of excellent flavor. He had received his seed direct from the originator, Mr. George Waring. He thought where they had not given satisfaction, there was probably some mistake about the seed. The most serious objection was admitted in its tendency to greenness and to crack about the stem.

The General Grant, though a beautiful round tomato of excellent quality, he thought, from his experience in raising it, was too small for a

market fruit. His favorite, next before the Trophy, was one of the Fejee class, which is known as Lester's Perfected. Murphy's Extra Early had been decidedly early under his cultivation, ripening about a week earlier than any others, though rather small, especially in its first fruits. Is of excellent flavor, and very solid. The Hoosier was of excellent quality in every respect, and preferred by some to the Trophy.

ERIE COUNTY GRAPE CROPS.

Col. Richmond, in his *ad interim* report, said: The vineyards in Sandusky and vicinity, including the Islands, suffered some from leaf mildew, with some rot in various localities, caused principally by the very heavy rain during the month of August and the cool weather of September. The enormous crop of last year also had some effect, weakening the vines and rendering them more liable to disease. Notwithstanding all this, there has been a large crop of grapes harvested. It is too early to get exact figures. From careful estimates made by several competent persons, this year's crop of grapes in Erie and Ottawa counties will be between ten and twelve thousand tons, worth about \$700,000. Nearly one million gallons of wine will be stored. The price of grapes has been low all the season. Good Concords for table use sold by the quantity at from two to three cents per pound; other early and fancy varieties at from four to six cents. Most of the good Catawbias were made into wine, the wine cellars controlling the price, the average being about four cents per pound. If it were not for the wine cellars we could not dispose of our grapes. Fortunately for us, the wine companies are doing well, declaring dividends of from twelve to fifteen per cent. a year. New cellars and additions to old ones will increase their capacity for storage 500,000 gallons this year.

The apple crop of northern Ohio has been light. A large crop could not be expected this season, owing to the great crop grown here last year. Price of good winter fruit, \$1.50 to \$1.75 per barrel.

We had another very good crop of peaches this season. The warm summer was quite favorable to their early maturity and good quality. Price good, from \$2 to \$3 per bushel.

Pears abundant, quality good, price low, trees remarkably exempt from blight.

Strawberries and other small fruit, medium crop; injured by drouth; quality fair, price low.

Sweet potatoes, fair crop; quality first rate; price \$1 per bushel.

Common potatoes injured by the drouth. Early-planted potatoes very good; quality first rate; price 50 to 60 cents per bushel.

The Colorado potato bug visited us in the summer. Thanks to our Horticultural Society, where the bugs were known to the people and the required information given for their destruction, they did very little damage, as we all went to work with a will, and picked them off, and saved our potatoes. We expect to have serious trouble next year, but if we cannot pick them off, we will kill them with Paris green. We are determined to kill them some way.

Judge Phillips, of Berlin Heights, Erie county, said he had raised this year, twelve tons of grapes from three and a half acres. His Catawbas averaged six tons to the acre. They were set six feet apart, in rows ten feet apart. Last spring he took out every other vine, and had this season the largest crop he ever had, though the number of vines were less. He raised about equal quantities of Iona and Concord.

Dr. D. H. Scott, of Chillicothe, gave the following

REPORT OF FRUIT CROPS OF ROSS COUNTY.

The principal fruits cultivated for profit, in this county, are apples, peaches and grapes. Orchards and vineyards having elevated situations, yielded, the past season, large and remunerative crops, while the fruits, of all kinds in the low lands, were entirely destroyed by the severe frosts of April.

APPLES.

The old orchards, planted by the early settlers, have, from long neglect and general bad treatment, disappeared, or are rapidly disappearing. Those of recent planting, are just coming into bearing, and where these were situated above the frost line, produced the past season, fair crops of unusually perfect fruit. The varieties most profitable are the Wine Sap, Rome Beauty, Tulpehocken, Smith's Cider, Milam and Rambo.

PEACHES.

Large quantities of peaches were shipped from this county, the past season, and for the most part brought very satisfactory prices. Owing to excessive drouth during the summer, the fruit was rather under size, but the quality was fair. The varieties best adapted to this locality are Coe's Early Red, Crawford's Early, Old Mixon Free, Old Mixon Cling, Heath Cling, Smocks Free and Lagrange.

GRAPES.

Neither rot, nor mildew, nor leaf blight, has prevailed in this vicinity to any injurious extent, for several years past. Our vineyards have yielded ample crops of fruit, of the finest quality. Most of the Concord weighing 75° to 87°, Catawba 90° to 95° Delaware 105° to 110°, Virginia Seedling 100° to 110°, Herbemont 90°.

The above list includes the varieties most in favor for vineyard culture.

The Iona has done well in a few localities, but has not generally proven a profitable investment.

In regard to the once celebrated Ives Seedling, our grape growers have but one sentiment, that of disappointment and condemnation. As a table grape, they find it worthless, and for wine, inferior to the Concord. Among the first to color, it is the last to ripen, if indeed, it can be said, ever to ripen at all.

THE MARTHA

Has also sadly disappointed us. It is sufficiently "hardy, healthy and white," but in quality it has proved "stale, flat and unprofitable." That it is sweet, is true, but its saccharine element is in such villainous combination, has such a decided India rubber aroma, that the better it is known, the more unpopular it is likely to become. That it has been sold, one or two seasons in small quantities for fabulous prices, is no true criterion of its intrinsic value. That its flavor may be agreeable to some palates, may be true, as it is also true of the paw-paw and May-apple; but the Martha is no more likely to take rank with the Delaware, Catawba and Concord, than the paw-paw is to find place in our gardens with the Seckel and Flemish Beauty.

The Roger's Hybrids, particularly Nos. 4 and 9, have acquitted themselves so well the past two seasons, that they have become quite popular as table grapes. Their value for wine has not been fully tested.

The Salem, so far as tried, has proved an entire failure. The man who advertises thirty acres of this variety in cultivation, has our warmest sympathies.

The grape growers of this vicinity are firmly convinced that our climate and soil are admirably adapted to the cultivation of the vine, and that as a wine producing locality, ours is destined to take rank with the most favored.

Adjourned until 2 P. M.

AFTERNOON SESSION.

Convention re-assembled at 2 P. M.

The committee on Nominations made the following report:

For President, Dr. J. A. Warder, of Cincinnati; Vice President, N. Ohmer, of Dayton; Secretary, M. B. Bateham, of Painesville; Treasurer, G. W. Campbell, of Delaware. *Ad interim* committee, Leo Weltz, of Wilmington; W. E. Mears, of Milford; W. J. Townsend, of Zanesville; Dr. J. W. Dunham, of Collamer.

On motion, the election was deferred till evening.

COMMUNICATIONS.

The Secretary presented a communication from the War Department relative to the Signal Corps Meteorological Observations for the benefit of commerce, which it is proposed to extend so as to render the work beneficial to agriculture. For this purpose the agricultural and horticultural societies throughout the country are called upon for a practical co-operation by permanent committees, with the chief signal officer of the army. After a little discussion, the communication was, on motion, referred to the Executive Committee for such action as they deemed necessary.

A communication was also received from Joseph Morris, of Cardington, Ohio, regretting his inability to attend the Convention, and expressing his pleasure in reading the reports of doings, and the beneficial results that have been developed from their meetings in the past.

A letter was read from W. H. Ragan, Secretary of the Indiana Horticultural Society, extending an invitation to their next annual meeting at Indianapolis, January 3d and 4th.

Dr. Furnas, one of the officers of the Indiana Society being present, seconded the invitation of their Secretary, and hoped that as many of our members as could do so, would attend their meeting. Their Society was young, as yet, in comparison with that of Ohio, but they felt it was doing a good work for the people of that State, as ours certainly had done for those of Ohio.

On motion of Mr. Bateham, President Dr. J. A. Warder was elected a delegate to the next annual meeting of the Indiana Horticultural Society.

TREASURER'S REPORT.

Dr. J. W. Dunham, Treasurer of the Society, submitted his report, as follows:

Amount on hand, November 22, 1870	\$683 50
Expenditures since March 1, 1871	498 00
Remaining in Treasury	\$185 50

[See his report in detail to March 1, at end of this Report.]

Ad interim reports being again in order, Mr. G. W. Campbell gave the following report for

CENTRAL OHIO—NEW GRAPES, RASPBERRIES, STRAWBERRIES, ETC.

I regret to say the season has been so unfavorable that I have little of importance to report upon the fruits of Central Ohio. A succession of severe frosts just at the time when most of our fruit trees were in bloom, destroyed the finest promise for many years, for an abundant crop of peaches, pears, apples, grapes, and small fruits generally. A few sheltered locations in our county had a partial crop of apples, but as a general rule, the apple crop must be accounted a failure; and the same may be said of pears and peaches.

The first blossoms of our grape vines were mainly destroyed; but many varieties put forth a second crop of bloom from secondary buds, and yielded a partial crop of medium and small clusters. Concord, Martha, and Delaware seemed to withstand the effects of frost better than most other kinds, and these varieties yielded better than any others on my place. Iona and Eumelan both fruited moderately; and Iona, owing to a dry and warm season, ripened more perfectly than ever before at Delaware. The Eumelan ripened about with the Delaware, perhaps a very little earlier; and the vine showed less tendency to mildew than heretofore. It retained its foliage well during the season, and ripened its wood perfectly. The same may be said of the Iona.

The Walter grape, until the present season, has always been a failure. Every year since its introduction I have planted the best vines I could procure from its originators; but could never get a decent growth. Mildew of the foliage seemed to attack it as soon as the leaves were formed, and no growth would be made during the whole season. I

planted the vines in rich, well drained soil, such as I should expect to produce from 80 to 100 bushels of corn to the acre. Last spring, I procured two more extra plants from Messrs. Ferris & Son, and planted them upon poorer soil, on a clay hill side, where they have done much better, one having made about 18 inches and the other two feet or more of growth. But the greatest success was in grafting. From three or four grafts set the past spring, I have larger and finer vines of the Walter than I can expect to have in five years from the best plants I have on their own roots; and I think I got canes and wood upon those grafts equal to the growth of a four or five year Concord vine, and shall expect abundant fruit from these grafted vines the coming season. Had I purchased grafts at \$20 each, when this variety first made its appearance, it would have been more profitable to me than vines at \$3 and \$5 each, which I procured. From my experience, I believe this variety will do much better grafted upon some other variety than upon its own roots.

The Martha grape set a very fair crop upon secondary buds, though the clusters were smaller than last year. It ripened well, but a little later also. I observed again, that upon attaining full maturity, after the green color of the berries had passed to a yellowish white or amber, nearly all trace of foxiness disappeared—though it was very prominent before. My opinion of this grape has not changed; and although it is not entirely to my individual taste, I have no variety in my garden of the older varieties more universally approved by the public at large; and it has really astonished me to note how many people say they prefer it to Delaware. Whoever has a taste for sweets, and to whom a little of the native aroma called foxiness is not objectionable, likes, and “wants Martha.” One of my own family, my youngest son, prefers perfectly ripened Marthas to Delawares.

The Croton grape bore a few clusters the present season, in three different locations. The vines made a healthy and vigorous growth, and ripened their fruits perfectly, about with the Delaware. This is certainly a grape of high promise; of exceeding delicacy, and compares very favorably with the Chasselas Fontainbleau, as grown under glass. If the vine proves, as it now promises, reasonably healthy and hardy, it will be the nearest approach to a native variety, or hybrid, of foreign excellence of character, yet introduced. There is no vestige of foxiness in the Croton, its flavor being perfectly pure; but of no very marked characteristic beyond a pure and delicate sweetness.

The Senasqua grape has not yet borne with me, although the vine has made an uniformly handsome and perfectly healthy growth. I have had the opportunity of tasting specimens of the fruit from several different localities, and must accord it also a prominent position among good grapes; and I believe it will be valuable wherever the Isabella will ripen perfectly. It is later in maturing than the Croton; and too acid, or vinous to suit many tastes, until it is perfectly matured. It then becomes quite rich, and sprightly, resembling the foreign West's St. Peter's grape in character.

Of the older varieties, not generally cultivated, the Maxatawny grape was better than usual the past season. It bore a fair crop of handsome, compact, amber-colored clusters; and though not high flavored, was very handsome and acceptable. The vine was also healthy and vigorous, which is its usual character at Delaware.

Of the older and well-known kinds, such as Concord, Hartford, Delaware, &c., I have nothing new to report, beyond the fact that they were all nearly free from mildew and rot, and ripened their moderate crops well, and at the same time formed an abundance of healthy wood for the coming year's fruiting.

GRAPE VINE INSECTS.

In this connection, I will mention that I have been examining the roots of grape vines that have little bunches of knots or bulbs formed on their fibrous side roots; and by the aid of a strong magnifier, find them to be covered by an aphid or plant-louse certainly very much like, if not identical with the *Phylloxera Vittata*, or gall-louse, which produces the knots or galls on the under side of the leaves on the thin-leaved vines in so many vineyards. I do not know how to account for the fact that I have not seen the work of this aphid on any of the out-door vines on my place this season; but in two of my green-houses there were, in patches, vines affected with these galls. Upon digging the plants it was found that in the places where the leaves had been affected, the roots were more or less knobby and abounding in little bunches of knots so well known to vine propagators; and upon a careful examination of these knobs and knots with a powerful glass, I found the little rascals in great numbers. Upon smooth roots, or upon vines free from these knobs and knots I found none of them. I cut open several of these knots, but found nothing inside; simply the clear, white substance of the root, the action of the aphid, whatever it may be, seeming to be confined to the surface of the root. I have not carried my investigations far enough to enable me to form an opinion as to the extent, or probable damage done to the vines by this insidious and hitherto unsuspected enemy; but it is not impossible that many of the maladies to which the vine is subject and which have been heretofore unexplained and unexplainable, may be referred to the hidden workings of this microscopic deprecator. The coming season I expect, with the aid of a powerful microscope, to investigate more minutely the habits of this aphid, with a view of devising some means of checking its spread; or, if possible, of destroying it.

Another serious enemy to the vine is found in the *Tettigonia vitis*, popularly known as *Thrips*. Where vines are so situated as to be conveniently fumigated with tobacco smoke, that is probably the most effectual remedy, and if applied early in the morning while the dew is on the foliage, upon the first appearance of this pest, it checks its spread, and one or two repetitions during the season I have found to prevent any serious injury. Another application has seemed even more effectual; but as I have only tried it once, do not feel like asserting too confidently that it is a reliable remedy. I have supposed that the eggs or larva of the *Tettigonia* were left either about the buds of the vine, or in the crevices of the bark, and that an application that would destroy them, if made in the fall or winter, would prevent their appearance the following season. I, therefore, some three years ago, after the worst season I had ever known for the ravages of *Thrips*, when my vines both on the walls of my house and the foreign vines under glass had been almost defoliated, pruned all my vines in the fall, and washed the stems with a very strong soap-suds, mixed with sulphur. The following year all these vines were certainly free from *Thrips*, both out-doors and under glass. The next year a very few appeared, and the succeeding year rather more; and the present season, they have appeared in sufficient numbers to determine me to give the vines another application, and if the result shall be the same as before, I shall conclude that it is a pretty effectual remedy against this enemy.

The apple-tree twig-blight, which was very prevalent last season, has not been noticeably apparent the present year.

Some quince trees which blighted badly during the summer of 1870, died outright the past season.

Pear trees do not seem to have suffered from blight to any considerable extent the past season—much less than the previous year.

RASPBERRIES were so much injured by the same late freezing weather that destroyed other fruits, that the crop was very light and unsatisfactory. The Kirtland and Davison's Thornless were the first to ripen; preceding Dolittle's Black Cap from 5 to 7 days. The Clarke did not yield as well as usual; and the "*true Naomi*" was almost a failure, nearly all the canes having winter-killed. Miller's Daily bearing Raspberry seems so far the best, and most productive of any of the ever-bearing black caps I have ever grown. In a parallel row with Lum's ever-bearing, its yield was at least double that variety. It is also of a very large size, and, for a black cap, of very good quality.

STRAWBERRIES.—The only varieties of Strawberries which I grew to any extent, were Jucunda, Charles Downing, President Wilder, Kentucky, Michigan Seedling, and the old Burr's Pine. The fruiting of all was greatly impaired by the freezing before mentioned; but all gave a moderate yield. The President Wilder yielded quite handsomely for two or three pickings, but was then done. Jucunda held out somewhat longer. The Kentucky was not as late, and did not continue in bearing as long as I expected. It, however, produced some very large and handsome berries of a very good quality. The vine is very strong, luxuriant and healthy; and I shall expect better results in a more favorable season.

The President Wilder is a very handsome berry, of quite uniform large size and regular roundish conical shape, and colors very evenly. It is also of very satisfactory flavor, and firm enough to carry well. Its greatest fault is too short fruit stems, the berries becoming badly soiled in rainy weather unless mulched with great care.

The Michigan Seedling is a very strong vine, and yields a large number of berries; but they are too small, too soft, too light colored, and too poor in quality, to be worthy of cultivation where any thing better can be had.

Charles Downing proves a very good variety, and, I think, is generally satisfactory. It yields well, is of good size, holds its fruit well up from the ground, and is of very good, but not of the highest quality. The vine is also very vigorous and healthy; but to produce its best results must be cultivated in hills or rows, in pretty rich ground, and kept measurably free from runners. With me it has not been productive when left to run and cover the ground.

VINEYARDS ON THE LAKE SHORE.

I would say a few words of the appearance of the grapes and vineyards as I saw them in the vicinity of Cleveland, during the meeting of the Society at Rockport, on the 9th of August, though much more instructive reports will, doubtless, be had from those who can report the results, of what then appeared so promising. With the exception that in nearly all cases, the vines seemed to be overlaid with fruit, I thought I had never seen so fine a promise for an abundant vintage as the present, in all the vineyards bordering the Lake, both east and west of Cleveland. I could not but express the fear that imperfect ripening would, in many cases, result from the too heavy crops on the vines; and I hope to hear from those who have observed throughout the season, whether or not these fears were well-grounded. I thought, also, that I discovered a tendency among vineyardists to do less of summer pruning, and to leave more foliage on the vines than in former years. Among the vineyards which I visited, and which appeared most promising, were those of Capt. J. Spalding, Mr. J. A. Harris and Mr. S. B. Marshall, west of Cleveland, and of our worthy Treasurer, Dr. Dunham, at Collamer, on the east. A most interesting collection of our native grapes, embracing, perhaps, more varieties than can be found upon any one place in Ohio, was found at Mr. F. R. Elliott's; and from him much and very valuable information may be expected as to the comparative value of different varieties, especially for the Lake shore region.

At Dr. J. P. Kirtland's place, we also found much that was exceedingly interesting, not only in a large collection of grapes and other fruits, but many rare and beautiful trees, shrubs and flowering plants; but the most interesting object of all, was the venerable Doctor himself, still hale and hearty, and overflowing with genial hospitality, and as enthusiastic as ever in his ardent love for horticulture and horticulturists.

G. W. C.

MEETING OF THE AMERICAN POMOLOGICAL SOCIETY AT RICHMOND.

[The following is the report of Mr. Campbell, as delegate from this Society, to the meeting at Richmond:]

The thirteenth biennial session of the American Pomological Society, held at Richmond, Va., on the 6th, 7th and 8th days of September, was, in many respects, an exceedingly interesting one, and although there was less of practical value in its proceedings than usual to the horticulturists of the North, still, as this Society is a national one, and this meeting was held in a southern city, very properly, and as a natural consequence, the discussion of fruits suited to southern latitudes was most prominent. The attendance was, perhaps, fully equal to that of any previous meeting of the Society, and it was said that every State in the Union was represented. The largest delegation from any distant State was from Massachusetts.

The meeting was organized at 9 o'clock on the 6th of September, President Wilder in the Chair, surrounded by the Vice Presidents from most of the States. Mr. Allen, President of the Virginia Horticultural and Pomological Society, welcomed the members of the American Society collectively and individually, and was handsomely responded to by President Wilder. There was also present the Japanese Minister, from Washington, Prince Jugoi Arinori Mori, who was invited to a seat upon the platform, and who remained during all the session, and seemed to take special interest in the proceedings of the Society.

After appointment of committees, and arranging the order of business for the several days of the session, a communication from the chairman of the reception committee was read, desiring the Society to meet in a body at the Hall of the House of Delegates at half-past 12, to receive a cordial welcome to the city of Richmond from the mayor; also on behalf of the city council and committee of reception, an invitation was extended to the Society and accompanying delegates, to participate in an excursion down the James river at half-past four, both of which invitations were accepted.

As one of the pleasantest incidents of the session, and one which indicates the good feeling which seemed to animate all with whom we were brought in contact, I cannot refrain from reproducing the truly eloquent address of Mayor Kelly, and the happy response of President Wilder.

At half-past 12 the members of the Society marched to the Capitol in procession, and were greeted by the mayor as follows:

Mr. President and Gentlemen: It is a pleasant service to be charged with extending you, as I am happy to do, a very cordial welcome to our city on behalf of the authorities and people of Richmond; and I embrace the occasion also to congratulate my fellow-citizens on the presence among them of so large and intelligent a body of gentlemen from all parts of our common country, engaged in a duty so beneficent that their deliberations will provoke hostile criticism in no quarter.

The union of science with labor is among the most characteristic peculiarities of our age. The time was when philosophy marched along the highways of the earth wrapped in lordly pride, which disdained all association with labor, and if it deigned to cast a look across the hedge that divided it from the field and the garden, it was to vent its scorn on the dusty hand and less intelligent brain there engaged. From this, two great evils resulted—First, agriculture, and every other form of fruitful labor lost the important aid of philosophy; and secondly, philosophy itself lost the powerful stimulus which profit lends to every development of human effort.

Almost within our memories all this has been changed; the white hand has clasped the brown, the teeming brain has grasped the plow, the pruning hook and the sickle, and those great agencies for the betterment of our race whom God hath joined, are no longer by man to be sundered. And with what splendid results on every hand! Surely, if he may be claimed to be a benefactor of his race who makes two blades of grass grow where only one grew before, your praise should be a thousand fold greater, who have taken the bitter fruit of a thorny tree in the wilds of Eastern Europe, unfitted for food for man or beast, and therefrom have developed the most delicious fruit of our day in more than five hundred varieties. [Applause.] And lastly, gentlemen, I welcome you with peculiar pleasure, as this is your first assembling in a Southern city. Let me indulge the hope that you have not only brought hither your persons and the superb results of your skill, but that you have come among us bringing your *hearts* likewise. [Great applause.]

When the late unhappy strife was ended, the first act of reconstruction was passed by nature. Our brother-blood was still boiling in hostile veins; the clenched hand was still unrelaxed, and the passions of war were still rife, when from a thousand skies and hill-sides and athwart a thousand plains, came the generous sunlight, the gentle rain, and the tempering winds, filling up the gaping rifle-pits, battering down the sharp escarpments of frowning forts, blotting out with waving grain the fierce scars of shot and shell, crowning battlements with fragrant flowers, and weaving a beautiful carpet of green over the scenes and sites of war's worst devastations. [Applause.] May it be your happy fortune and high privilege, gentlemen, you who labor with nature in so many pleasant and profitable fields, to lend her a helping hand and a willing heart in this, the noblest field of all! [Loud and continued applause.]

Col. Wilder replied as follows:

Mr. Mayor: In behalf of the American Pomological Society and in my own behalf, I return you my grateful acknowledgments for your gracious welcome and for the most eloquent words in which you have addressed us. I am happy to be here. We are happy to be here in the capital of the Old Dominion, a State so distinguished for the production of illustrious men—of Washington, Jefferson, Madison, Monroe, Harrison and Tyler—all of whom have filled the highest station in the gift of the people; John Marshall, Patrick Henry, Henry Clay, names that will ever constitute a galaxy of talent to fill the brightest page in the annals of American history. We come from different and widely distant sections of our country.

I came from the cold and sterile soil of New England, where we have not the luxuriant soil of the West, nor the warm, genial and sunny clime of the South, but, sir, we have hearts as warm as yours; and although granite and ice enter largely into our exports, they are no evidence of the hardness of our hearts, or the coldness of our affections. I assure you, sir, we are most happy to be here and to meet our Southern brethren on Southern soil, to concert measures for the promotion of the object of our Society, the extension of fruit culture throughout the length and breadth of our land. With the natural advantages which the South possesses, and especially your own Virginia, upon whom the North depends so largely for early fruits, the time is not far distant when

fruit culture will constitute a source of revenue scarcely second to any other product of the soil. Our Society is now in session, our time is very precious, and with the hope that you and your board will honor us with your presence at our meetings, I beg you will allow us to retire.

Immediately after this, Mr. Getty, of Massachusetts, proposed (while the Mayor of Richmond and Col. Wilder were parting) three cheers for Massachusetts and Virginia—shaking hands—upon which Mr. Wilder responded, upon the broad platform of good-fellowship and good citizenship. This was received with tremendous applause, when the delegates dispersed to examine the various curiosities and attractions of the capital.

At 3 o'clock in the afternoon, the President delivered his biennial address, which was in his usual impressive and graceful style, and was listened to with marked attention. The principal topics of the address were the origin, history, objects and progress of the Society; a happy allusion to the circumstance of meeting in a Southern city, where we received so cordial a welcome; the experience of the past, particularly as to the influence of warm and dry seasons, the draining of lands for fruit culture; preparation and cultivation of the soil; manuring; thinning of fruit and its advantages; shelter; meteorology; originating of new varieties, and the increasing importance of fruit culture throughout the country. A feeling and appropriate tribute to the memory of deceased members concluded the address.

The exhibition of fruits was at Assembly Hall, which was very tastefully garlanded and decorated with flowers and evergreens. The display of fruits, I think, was larger than that at any previous meeting of the Society; the more distant States, of California, Kansas, Nebraska, Iowa, Minnesota, Illinois and Michigan, being the largest exhibitors.

It would take too much time to enumerate all the fruits on exhibition, but an idea may be formed of its extent, when I say that Nebraska exhibited 146 varieties of apples, 15 of peaches, and 13 of pears; Kansas, 250 plates of apples, comprising about 200 varieties; 20 varieties of pears, and some dozen or more varieties of grapes.

California sent 37 varieties of apples, 41 of pears, mostly of enormous size; 1 plate of olives, 1 of oranges, 1 of quinces; and enormous specimens of Coe's Golden Drop plum. There were also magnificent specimens of Black Hamburg, Tokay, Flamed Tokay, Muscat of Alexandria, Black Malaga, and the California Mission grape, all grown in the open air. This Mission grape seemed much like Black Hamburg, sweet and of fine flavor, but firmer, or more solid in flesh.

Texas sent some specimens of Black and White Scuppernong grapes; and some very fine Devereux and Lenoir—much finer than any I have seen grown at the North.

Of individual exhibitors, Marshall P. Wilder had 230 varieties of pears; Ellwanger & Barry had a very large collection of pears, and 150 varieties of apples.

A very fine collection of apples—137 varieties—was exhibited by John Dollins, of Albemarle county, Virginia. They were specially remarkable for fine size, and uniformly smooth and handsome appearance, with entire freedom from imperfections, so common in our apples in many places at the North.

Parker Earle, from Southern Illinois, exhibited 200 varieties of apples.

Many other exhibitors had collections of apples and pears, some numbering hundreds of varieties.

Specially noticeable were some remarkable pears from G. F. B. Leighton, of Norfolk, Va.; the finest Duchess, Seckel, Bartlett, Louise Bonne de Jersey, Beurre Dail, and perhaps a few other kinds, that I had ever seen. One specimen of Duchess weighed only one ounce less than two pounds; and the other varieties were really finer, in size and appearance, than those of the same kinds from California.

The Scuppernong grape, both the black and white, or yellow varieties, were on exhi-

bition in large quantities, and in best condition. With the exception of a very thick almost leathery skin, I found this variety of pleasanter flavor than I expected, and less pulpy than any I had before seen; and though it cannot compare with our best northern cultivated varieties, is, in flavor, better than any of our wild fox grapes that I have seen. It does not seem to form a bunch, but grows in small clusters of two or three berries only, and the portion of the vine bearing the grapes looked more like hazel-brush or twigs than grape vines. The leaves are also very small and rather thin, quite unlike those of our northern vines; not lobed, but coarsely and sharply serrated.

The premium of \$100, offered for the largest and best display of apples, pears, peaches and grapes, was awarded to Kansas; \$50 for the largest display of apples, to Mark Miller, of Iowa; \$50 for best display of pears, to Ellwanger & Barry, of Rochester.

Several smaller premiums were also awarded on grapes; and some which were offered were not awarded, as no articles were found on exhibition which met the requirements. I think all the premiums were donated to the Society for the purpose of procuring a die, for a suitable medal, to be used in future by the Society for its awards.

A remarkable collection of hybrid seedling grapes, embracing some 40 varieties, was exhibited by Dr. Wylie, of South Carolina. Some of them were very beautiful and of excellent quality. The Doctor has been experimenting, mainly, to produce varieties suited to the wants of Southern localities, but thinks some of them would also do well at the North.

Grapes were not as largely exhibited as other fruits, from the fact that the meeting was held too early in the season for our northern varieties to be mature. In addition to the Scuppernong, fine specimens of the Herbemont, Lenoir, and Clinton, of southern growth, were on the tables; larger bunches and of finer flavor than are seen at the North.

With the exception of one evening, when an extra and rather informal session was held, there was very little of discussion of the merits of different varieties, or of the diseases or culture of fruits generally. On this evening, the subject of pear blight was the principal one discussed; but little that was new, however, or of any practical benefit, was elicited. The general opinion was, that the most destructive kind of blight was caused by sudden and extreme changes of temperature, at some time during the season preceding its appearance. Mr. Saunders had used a wash containing lime and sulphur, which he thought very efficacious in promoting the health of the pear tree. In the experimental garden of which he has charge, at Washington, there are many varieties of pear trees, and their health, vigor, and productiveness was in many cases truly wonderful—whether owing to lime and sulphur, I cannot say—but I have scarcely seen healthier or finer trees.

As an indication of the great difference in climate between Richmond and Ohio, I may mention that I saw the Grape Myrtle standing in the city yards, stately shrubs, ten to fifteen feet high, covered with a profusion of charming, bright rose-colored flowers. It seemed as common there, as the Wiegela or Deutzia in our region.

I noticed, also, that the Willow-leaved Oak was used largely as a shade-tree for the streets of Richmond; but whether it was the northern variety, or the smaller upland willow-leaved oak of the South, I am not able to say. It, however, impressed me as a very beautiful tree for this purpose.

The banquet which was tendered the members of the American Pomological Society by the Virginia Horticultural Society, at the close of their sessions, was a grand affair. The tables were spread in Assembly Hall, where the Exhibition was held; and they were beautifully decorated, with fruits and flowers, in the greatest profusion; and so abun-

dant was the entertainment provided, that after all had partaken, there seemed hardly an impression made upon the generous and bountiful supply with which the tables were literally loaded. The affair wound up by a few appropriate toasts and speeches, and all felt that the occasion had been one of unusual enjoyment, and one calculated to promote good feeling and brotherly union between the Horticulturists of the North and the South.

HORTICULTURAL EXHIBITION AT PHILADELPHIA.

From Richmond, I returned home by way of Philadelphia, and looked in upon the Exhibition of the Pennsylvania Horticultural Society, which was held in their grand, new Horticultural Hall, from the 12th to the 15th of September. Many of the fruits from the Western States, which had been exhibited at Richmond, were here also; in addition to which were large and interesting collections from various sections of the State of Pennsylvania, mainly from the vicinity of Philadelphia.

The floral display was magnificent, not only in the way of decoration, but largely of splendid specimens of rare greenhouse plants, from the establishments of Messrs. Buist, Mackenzie, Huster, Graham, Dreer and others. The rarest varieties of palms, ferns, crotons, caladiums, and ornamental foliaged and variegated plants generally, were exhibited in a profusion quite bewildering.

Quite noticeable was a collection of 161 varieties of conifers, by Messrs. Hooper Brothers & Thomas, of Westchester, Pa., grown in pots. They also exhibited 35 varieties of pears.

Messrs. Ellwanger & Barry, of Rochester, and Hovey & Co., of Boston, exhibited very large collections of pears.

The display of foreign grapes was very fine, both in quality and quantity, but the native varieties were very sparingly represented. I observed nothing new or remarkable in this line, except some 6 varieties of seedling grapes, principally hybrids from the Clinton, with foreign varieties, from Mr. J. H. Ricketts, of Newburgh, N. Y. Some of them were very handsome in bunch and berry, and though not quite ripe, seemed very promising as to quality. Mr. Ricketts is a very enthusiastic and successful hybridizer of the grape, and I think we may reasonably look for valuable results from his efforts.

Mr. Underhill's Croton and Senasqua grapes were also exhibited here, and at Richmond, and more than sustained their former reputation, the bunches being larger and finer than I had seen before, on exhibition. It would, however, take up more time than we can spare to merely mention all the objects of interest exhibited. The exhibition, however, was of such a character as to indicate unmistakably, that in every department of Horticulture, the tastes of the people, or at least of those engaged in horticultural pursuits, is eminently progressive, and that the interest of the community at large is correspondingly increasing.

G. W. C.

FOREST TREE CULTURE.

The next subject on the programme was the care and culture of forest trees, on which Dr. Warder spoke for about half an hour, giving a variety of important facts and suggestions on the necessity and value of forests, for their climatic influences, and for timber, etc. He spoke of the irregularity of the seasons, the destructive freshets and severe drouths as con-

sequences of the destruction of forests; also of the profits that may be realized from the judicious planting of forest or timber trees. His remarks on this subject are given in full in an essay for the Report of the State Board of Agriculture, hence are not published here.

Col. S. D. Harris, of the *Rural New Yorker*, asked Dr. Warder whether the common theory in regard to the influence of forests, as affecting the amount of rain fall, was confirmed.

Dr. Warder replied that we needed a few more years of extended observations to settle the point, but there was no sort of doubt respecting the influence of forests in ameliorating the climate and lessening the severity of floods and drouths.

Mr. Klippart, the Secretary of the State Board, gave some interesting statistics which he had gathered respecting the rate of the destruction of the forests in different sections of Ohio. These will also be found in the Agricultural Report, of which this is an appendix.

EVENING SESSION.

There was a large attendance in the evening, many ladies being present. The first exercise was an address by M. B. Bateham, of which the following is only a synopsis :

FLORICULTURE FOR THE MILLION.

Floriculture may be called the poetry of horticulture—but there are many people who have little taste for poetry, and correspondingly little for flowers. They see no utility in flowers, and pride themselves on being matter-of-fact people. They tell us this is an age of progress, and that practical utility is the test of value. They ignore the great fact that man is endowed with a spiritual and moral as well as a physical nature, and that the wants of the soul are as real as the wants of the body, and that God intended that they should be supplied. The great Teacher has told us that man shall not live by bread alone, and to teach us a lesson of faith and trust in Providence, He bids us "Consider the lilies, how they grow; they toil not, neither do they spin: And yet I say unto you that even Solomon in all his glory was not arrayed like one of these. Wherefore, if God so clothe the grass of the field, which to-day is, and to-morrow is cast into the oven, shall He not much more clothe you, O ye of little faith?"

The most popular living preacher in this country has said: "Blessed be the man that really loves flowers—loves them for their own sakes, for their beauty, their associations, the joys they have given and always will give." * * * But such men need no benediction of mine. They are blessed of God! Did he not make the world for such men? Are they not clearly the owners of the world, and the richest of all men?

"Flowers are the sweetest things God made and gave no soul." He who does not appreciate floral beauty is to be *pitied* like any other man who is born imperfect. It is a misfortune not unlike blindness. But men who contemptuously reject flowers as effeminate and unworthy of manhood, reveal a certain coarseness. Were flowers fit to eat or drink, or could they be gambled with, like stocks in the market, these men would take

them up, just where finer minds would drop them, who love them as the revelations of God's sense of beauty, as addressed to the taste, and to something finer than the taste—to that power within us which spiritualizes matter and communes with God through His works, and not for their paltry market value.

There are potent reasons why such sentiments as these should be more generally inculcated, and the culture of flowers encouraged among our people at the present day, as a means of counteracting some of the evils growing out of the excessive business activity of the age, and the insatiate desire for riches and display which is luring our young men and women to forsake their country homes for the excitement and follies of city life. As shown by the census, the increase of population of our cities and villages is many fold greater than in country districts; and in many rural districts the population has been steadily diminishing for years past. The spirit of discontent or unrest has sadly prevailed among our farmers and their families, prompting many of them to sell their farms and forsake the homes of their childhood and youth and remove to distant parts, in the commonly vain hope of finding more enjoyment there, or flocking into the towns and cities to meet with almost certain failure and disappointment.

There is also an alarming increase of insanity and other diseases growing out of this over-strain of the nervous and mental powers and undue thirst for riches. Only think that nearly twenty-five hundred insane persons are confined at this time in jails and asylums of our own State. Look at the vast building now commenced at Columbus for the accommodation of this class of unfortunates, estimated to cost at least three-quarters of a million dollars, calculated to accommodate six hundred of these deranged ones.

This is but one of three or four establishments of the kind in the State. And then how many of the thousands of criminals shut up in our jails and penitentiaries were tempted to the commission of crime by this passion for money and display!

The chaplain of the asylum for insane at Utica, New York, some years since, in a report of that asylum, said: "It is truly wonderful to see so many bereft of reason, more especially so, when but few of those become what they are by what we may call the "Providence of God," but that in a large proportion of cases, the disease is traceable to early mis-government, intemperance, prodigality or mortified ambition and disappointment in worldly aims." In alluding to the means for counteracting these evils, he said: "It should not be forgotten that the love of home, the cultivation of fruits and flowers, and all those enjoyments which enliven and bless home, were intended by God to contribute to mental equanimity."

With such facts before us, it is plainly the duty of this association, of all similar associations, and of all good men, philanthropists and christians, to lend the influence of their example to this work of beautifying home, of making it attractive, and cultivating a love for floriculture, disseminating this taste among the millions of our people; not simply planting a few flowers or a few shrubs to decorate the front yard, or because some travelers remark that they can tell the character of the people by their door-yards; or not, as some do, to make their homes more saleable. But teach people to love flowers for their own sake; to commune through them with God the Creator of them, to learn that faith which brings peace and happiness to the soul.

These are the great motives for floriculture, the reasons for teaching our children to love and beautify our homes, that they may be saved from the love of undue excitement and worse than frivolous amusements.

It is time, too, that some improvement should be taking place in our horticultural literature; we have, I think, enough of books like some recently published: "Money in the Garden," "Fruit culture for profit," "Gardening for profit," "Practical Floriculture,"

teaching simply how to grow fruits and flowers to sell. Let us have something like "The delights of Horticulture," "The moral use of Flowers," and books of that character, and it will be the commencement of better times in horticulture.

I have been exceedingly gratified, within the past year or two especially, to notice the progress that is visible in our country in this matter of beautifying homes, by the cultivation of flowers among the millions. The taste for flowers and the use of floral decoration at fashionable parties, etc., in our cities, has increased wonderfully within the past three or four years, and no less marked has been the increase of floriculture among the millions, as a means of embellishing country homes, and thus making rural life more attractive. I believe there are at this time, ten thousand more homes in our State whose inmates cultivate flowers than there were three or four years ago—and I trust there will be full as many more in three or four years to come.

Various agencies have contributed to produce these results. Chief among them may be named the agricultural and horticultural press, and cheap postage on seeds and plants, together with the enterprise and liberality of seedsmen and florists. Much credit is due to the men of these professions throughout the country, but especially to those who, like Vick, Bliss, and others, not only furnish reliable flower seeds and plants by mail, at low prices, but also spend tens of thousands of dollars annually in disseminating information among the millions respecting the different varieties of flowers and their culture, by means of attractive catalogues or "Floral Guides," and such elegant colored pictures as those exhibited over this platform. I have here before me an advance copy of Mr. Vick's catalogue or Floral Guide for 1872; a book of 112 pages, elegantly printed on the finest tinted paper, and each page illustrated with engravings, some of them nicely colored, making the expense of its publication nearly fifty cents per copy, and yet it is furnished gratis to his thousands of customers, and to all who ask for it for ten cents, and an edition of two hundred thousand copies will be distributed in this way—of which number, Mr. Vick informs me, twelve thousand copies or more will go into families in Ohio. Now, if we estimate that Bliss, Briggs, and others, together, furnish an equal number of similar works, and then consider that one such catalogue usually serves for several families, and that every year increases the number of their readers and those who put in practice their teachings, it is easy to see what a mighty agency this is for the promotion of horticulture and the improvement of rural taste and country homes. Let us all rejoice in the progress of this good work, and award due honor to the men who are thus pushing it forward!

PRACTICAL HINTS.

In pointing out a few of the mistakes that people are apt to make in embellishing home grounds, Mr. Bateham said the first thing to avoid was planting too many shade trees close around, or in front of the dwelling. Shade trees are good, in their place, and in moderate number, but too much shade is a great fault, and a very common one, especially in old places, rendering the house both gloomy and unhealthy. An open lawn or plat of smooth grass should, if possible, occupy most of the space between the front of the house and the public road; this, to be kept neat and smooth by frequent mowings, should, of course, be mainly free from trees or shrubs—though a scattering of these should appear at the sides, and near the front and rear, and especially where they will afford protection from severe winds, and screen from public view the back yard, stables, etc. In preparing this grass plat or lawn, be sure to plow the ground deeply, first enriching it well, if at all poor, and grade it properly before seeding.

The walk or pathway, from the front gate to the doorway of the house, should be five or six feet wide, and, if of considerable length, should form an easy curve, rather than

a straight line; and on this account it is commonly better to have the gateway a little on one side, rather than directly opposite the front door. Then a bushy shrub or evergreen or two should be set on the inside of the curve, so as to present to the eye and the mind a sufficient reason for the curve of the pathway; else the effect will be unsatisfactory.

Near the dwelling, and where in view from the front windows and doorway, may be several flower beds, of any desired shape and size, cut out of the sod. Do not make them as long borders to the walk or fence, but rather as ovals, circles, or other simple forms, that can easily be kept in shape. Let the soil of these be made as deep and rich as can well be; and then do not crowd them with too many kinds of flowers; but choose the best that are adapted to the soil, and give them good culture—for a few sorts well grown are much prettier than many poor ones. It is a common fault of young florists to grow too many varieties and spoil the effect of their flower beds by too great a mixture.

Do not, however, be afraid of having too many good flowers. Make extra beds by the side or rear of the house, or at the entrance of the kitchen garden, and plant them liberally with free blooming sorts—and such are some of the finest of all—then you can cut freely for bouquets for the parlor or dining room, and to send to sick neighbors or to the school room, thereby cheering and blessing a whole neighborhood.

Members of this Horticultural Society, I am sure will all rejoice in the opportunity of participating by their influence and example in this good work of promoting floriculture among the millions. Let us no longer be counted as merely a society of commercial fruit growers and nurserymen, testing every thing by the rule of dollars and cents, but rather as one of the moral and benevolent organizations of the State, aiming to promote the happiness of the people by elevating and refining their tastes, and contributing to the pleasures and healthfulness of rural life.

After the conclusion of the address, Thomas Paxton, of Loveland, said he was an advocate of floriculture, and it was somewhat of a speciality of his to raise roses. A thorough preparation of the soil he found to be an important point. He recommended first, digging off a foot of the soil and laying it aside; and then digging out two feet of sub-soil and filling it up with decayed sods or leaf mold from the woods or well decayed manure. If he would tell them that by going a single spade deep in the clay soil, they could have roses from June until the frosts in the fall, they would be sadly disappointed, especially such a dry season as the last one. If they would go to the trouble of preparing the soil as he had directed, and take proper varieties, there would be no fear but that they would succeed.

N. Olmer, of Dayton, was greatly in favor of mulching. He said, after the annuals are transplanted, the ground should be mulched to the depth of two or three inches. In that case they would require very little watering and no stirring of the soil. He had a rose bed in front of his house that had been planted seven years, in which the ground had never been disturbed since, only to receive the annual coating of three or four inches of well decayed manure, put on in the fall of the year. He cut his roses back in the fall to eight or ten inches, trimmed off the small branches,

and in addition to this, almost covering them with well decayed manure. He used boards to cover his Bourbon and Teas during the winter. They had not received a drop of water during the year, yet he could have found roses enough on them when he left home for this meeting to have made a fine bouquet. Watering is sometimes injurious, especially in clay soil, but when mulched they can be watered, if desired, without any injurious effect. Mr. Paxton considered mulching quite important, but thought it very necessary to work the mulch into the soil.

Leo. Weltz concurred in the views of Mr. Bateham. He believed that the taste of our children should be cultivated as suggested, that they may become attached to their homes and look upon them with pride.

D. C. Richmond remarked that he was only a practical farmer and not a florist, but he loved the beautiful flowers, the emblems of innocence and virtue. They have the tendency to elevate us above the vices of the land, and lead us to love nature and nature's God. Many European railway stations are surrounded by beautiful flower gardens. Flowers are everywhere to be seen, and they exercise a moral influence upon the character of the inhabitants. Farmers generally have not much time to give to the decoration of their homes. The ladies must take charge of this matter, and they are better adapted for this work as they have more taste. It would also do them good to spend more time in the glorious sunshine. We do not want them to be mere hot house plants, as many of the American ladies are at present. We want them to take an interest in this matter, and imitate our English cousins, who live much in the open air and take an interest in out door exercises. It is a matter of great consequence that we make our homes beautiful and pleasant, not only for our own satisfaction, but particularly for the sake of our children. I know that too many of our children, at the present day, are longing for the allurements of cities, where they may soon be lost. How much better that they stay on the farm.

I am very much obliged to Mr. Vick and others for the beautiful catalogues they send out, which help so much to educate the people, but I believe we should patronize our home establishments, of which there are quite a number that deserve credit for publishing instructive catalogues.

J. H. W. Mumma thought the subject one of greater importance, perhaps, than most of those present thought it to be. Two years ago he went into floriculture a little for his own benefit, and felt he had been well repaid for all his labor. Both sides of the lane leading to his house, a distance of about two hundred yards, was lined with flowers from early spring until late in the fall. He claimed that floriculture and horticulture were twin sisters, and should go together. He purchased his first flower seeds from Mr. Vick, and felt well repaid for the money he had thus ex-

pended. The Phlox Drummondii and Petunia he considered among the most beautiful and easily cultivated. He practised mulching, with great benefit; also the plan recommended by Mr. Paxton for the deep preparation of soil. This was a little trouble in the first place, but would well repay in the end.

G. W. Campbell referred to some bulbous plants which had not been mentioned, that were very showy and beautiful and could be easily grown, such as the Crocuses, Hyacinths, Lilies, etc. Some fourteen or fifteen years ago he had purchased some bulbs of that kind and planted about his place, which gave a succession of flowers from that time until this. Of the easily grown annuals, the Petunias had perhaps given him more pleasure than any plants he had cultivated the past season. They are quite beautiful, and give a constant succession of bloom all the time until cut off by the frosts, enduring the hottest sun. The double Zinnias also are beautiful, varied in almost every color, and very easily grown. He started the two latter in boxes early in the spring, that they might be protected until they could be transplanted.

ELECTION OF OFFICERS.

The nomination of officers, as made by the committee, was taken up and amended in consequence of the withdrawal of G. W. Campbell for Treasurer, and the substitution of Dr. J. W. Dunham for that office, when the following election was had:

President, Dr. J. A. Warder, of Cleves; Vice President, N. Ohmer, of Dayton; Secretary, M. B. Bateham, of Painesville; Treasurer, J. W. Dunham, of Collamer.

The committee *Ad Interim*, was chosen as follows: Leo. Wetz, of Wilmington; W. E. Mears, of Clermont county; D. C. Richmond, of Erie county; W. G. Townsend, of Zanesville; J. W. Dunham, of Cuyahoga county, and G. W. Campbell, of Delaware.

After which the Society adjourned until 9 A. M.

THIRD DAY.

MORNING SESSION.

The first business was the report of the committee on Fruits, by the Chairman of the committee, L. Wetz, of Wilmington, which was as follows:

Your committee appointed to examine and report on the different kinds of fruit on exhibition, desire to say that they found a very large and fine display of various fruits, not alone from this part of the country, but also from Kentucky, Missouri, Illinois and Kansas. We may justly feel proud of the display exhibited here.

A. M. Gatch, of Milford, made the finest display, with over forty varieties of beautiful apples.

N. Ohmer, of Dayton, exhibited four plates of magnificent apples—Baldwin, Rome Beauty, Belleflower and Bentley Sweet; also two plates of fine pears—Beurre Easter and Vicar.

Jacob Pfrimer, of Milford, had ten plates of apples—Golden Russets and some others, very fine.

Jesse Teal had fifteen varieties of apples and one plate of the Columbia pear, remarkably fine.

Martin Barnes, of Indian Hill, had eight plates of good apples.

Henry Finch, of Plainville, had ten plates of apples and one of pears, the latter not in good condition.

W. E. Mears, of Milford, exhibited a plate of oranges and lemons of domestic growth; also samples of persimmons, high-bush cranberries and Ives grapes.

John Applegate presented sixteen plates of very fair apples.

H. Emery, one plate of very large apples—Tulpehocken.

Charles Orr, one plate of fine White Pippin, and one of Rock Pippin.

Lewis Finch, of Plainville, exhibited nine varieties of apples, one plate of Vicar pears, and one of Ives grapes.

J. H. W. Mumma, of Dayton, fourteen varieties of nice apples.

Gen. Hurst, of Chillicothe, presented three varieties of apples for names. The committee recognized the Jonathan as one of them.

W. K. Tipton, of Belmont county, presented a collection of forty varieties of fine apples, and samples of the Pound Pear, from the Eastern Ohio Horticultural Society.

L. Weltz, of Wilmington, exhibited the Nickajack apple—large and fair.

M. B. Bataham, of Painesville, had specimens of a handsome and good apple, thought to be a seedling, resembling the Tewksbury Winter Blush, but larger and better.

James Truitt, of Quincy, Kentucky, presented eighteen varieties of apples, many of them very good, others (as a curiosity) only half grown and quite green, being of a second growth where the first crop of blossoms and leaves were destroyed by frost the latter part of May.

George Park, of Parkville, Missouri, sent seventeen varieties of apples, mostly new or southern. Among them the Lawver, of Illinois, very handsome; Park's Keeper, valuable for the South; Wine Sap, large and fine samples, and Winter Sweet, very good, resembling Evening Party.

Dr. J. A. Warder, of Hamilton county, exhibited a very interesting collection of sixty-eight varieties of apples, many of them quite new or rare, others southern and western kinds that he is testing. The committee presume he will give the Society some information about them.

"CLERMONT" APPLE.—Among the apples exhibited were several plates of a variety known in Clermont county as Jackson's Roman Stem, also as Cheese Apple. A fair looking apple, of medium size, resembling in color, shape and texture the yellow Newtown Pippin, but thought to be not quite as fine, though very good as a late keeper, and more productive and profitable than the N. P. It was thought to be a seedling of that region, and to have originated from seeds planted by the renowned "Johnny Appleseed." On motion, it was voted to name it *Clermont*.

Of the Newtown Pippin, it was said it did not succeed well around Milford. Mr. Bailey, of Chillicothe, said it succeeded well on rich sugar-tree soils in his section, but was worthless on poor soils.

The new apple presented by Mr. Bateham was highly approved by all who tasted it. Mr. B. said he found it in Euclid township, Cuyahoga county, where it was believed to be a seedling. Mr. Elliott had supposed it to be the Tewksbury Winter Blush, but Mr. Downing and Dr. Kirtland had decided otherwise. He regarded it as an exceedingly promising dessert fruit for spring use. He would investigate farther respecting its productiveness, growth of tree, &c., and report hereafter.

The "*Evening Party*" apple was commended very highly by several growers of Clermont county, and also by Dr. Warder. It is very handsome, a good keeper, and tree quite productive.

Very fine specimens of the Rambo being presented by A. M. Gatch, he was asked how he succeeded in keeping it so late. He said there was something to prevent apples falling or rotting, in the manner in which a man cultivates the ground in his orchard. He cultivated his with hogs. Even if they did eat a few apples, he thought it better than to let insects eat them all. He usually picked his Rambos in October. Some seasons were earlier than others, which would make a difference in the time of picking. He kept from forty to sixty hogs in his orchard, which kept the ground thoroughly plowed up, and he supposed destroyed the insects. After he picked his apples, he laid them in a shed. After they had been there some time, they were sorted over and put in the cellar, which was ventilated sufficiently, without letting them freeze.

BEST WINTER APPLES FOR MARKET.

A request having been made that some of the practical orchardists present should name the best five or six varieties of winter market apples for Southern Ohio, the following responses were given:

A. M. Gatch—White Pippin, Rome Beauty, Rambo, Baldwin.

Mr. Teal the same, adding Putnam Russet and Clermont.

Mr. Emery—White Pippin, Smith's Cider, Baldwin, Putnam Russet, Rambo.

Mr. Weaver—Wine Sap, Clermont, Smith's Cider, White Pippin—Rambo and Baldwin good, but ripen too early.

Mr. Bailey, of Chillicothe, approved all that had been named, and commended the Newtown Spitzenburg (called "ox eye" around Cincinnati), also the Milam and Pomme gris.

Several other orchardists expressed their preferences, not materially differing from the foregoing.

BEST PEACHES FOR PROFIT.

As quite a number of extensive peach growers were present, they were asked to name their best varieties in their order of ripening:

A. M. Gatch—Troth's early red, Crawford's early, Oldmixon free and cling, Delaware (of New Jersey), Ward's late, Crawford's late, Smock, Fregman's white.

Mr. Pfrimer—Troth's red, Crawford's early, Honest John, (large York), Oldmixon free, Stump the World, Ward's late, Crawford's late, Smock.

Mr. Smizer would add a local variety called Gudgeon's late; latter than Smock and better.

Mr. Emery—Troth's, Crawford's early, Oldmixon, Large York, Crawford's late, Smock, Heath cling.

Thomas Paxton, of Loveland—Troth's, Crawford early and late, Smock.

E. J. Emery the same, adding Oldmixon free, every time.

Mr. Teal—Troth's, Crawford's early, Stump, Large red and Lemming's red, Crocker's white.

A. F. Quail—Troth's, Crawford's, Jersey mixon, Oldmixon free, Stump, Ward's late, Smock.

Mr. Bailey, of Chillicothe—Troth's, Crawford's.

CULTIVATION OF PEACH ORCHARDS.

On this subject, the general expression was in favor of good cultivation, though in some cases on rich soils, peach orchards had done well, left in clover for several years.

Mr. Thomas Paxton said that the practice in his neighborhood was to plow early in the spring, as soon as the ground was in good condition, and then cultivate or harrow to keep the grass from growing. He instanced Mr. Porter's peach orchard at Mulberry as being kept throughout the season as clear from weeds as any garden.

REPORT OF COMMITTEE ON VEGETABLES

was then made, as follows:

We find four seedling potatoes on the table, grown by G. W. Campbell, of Delaware, deserving special mention.

Campbell's Late Rose is a remarkable product, similar in appearance to the Early Rose.

The varieties of White Seedling, Nos. 1 and 2, and Red Seedling, No. 3, we recommend with confidence to the public for trial as new varieties.

Dr. Warder's display of potatoes deserves great credit. His collection of Trophy tomatoes is remarkably fine for this season of the year. The qualities of his potato varieties

we designate as follows: Early Gulick, good; Worcester, superior; White Peach Blow, fine; Early Mohawk, fair; Climax, good; Early Rose, good; Copper Mine, first rate.

In J. B. Gatch's collection, the White and Blue Neshannock, good; Irish Cup, good and large in size.

The White Seedlings of Dr. S. M. Ayers, of Urbana, are good.

The White Neshannock and Early Rose, together with White Turnip, exhibited by Wm. Mears, of Clermont county, are of fair quality.

The collection of sweet potatoes submitted by G. L. Galloway was fine in the display of the Nansemond, Brazilian and Bermuda yams. The French yam, of medium size and red in color, is of the best quality.

An unknown exhibition of Irish Cup, Early Rose and Peach Blow was good.

A very remarkable instance in the growth of sweet potatoes is shown in one stalk containing (apparently) both the Nansemond and Bermuda varieties.

In conclusion, we report a good display of potatoes, but wish there had been a larger collection of other vegetables.

ON PLUM CULTURE.

Mr. Bateham inquired where the large quantities of Damson Plums were grown which, every season, came into the Cincinnati market, and many of which are shipped from thence to nearly all parts of the country.

Mr. Mears replied that they were mostly grown on clayey and hilly lands, up and down the Ohio River, both in Kentucky and Ohio, but not in large orchards, though some plantations of good size had lately been made.

Mr. Bailey, of Chillicothe, said he was convinced that under favorable circumstances, Damson Plums would be found a more profitable crop than most other fruits, and acting on the belief, he had planted over two thousand trees of the Shropshire Damson. "What about the curculio?" he was asked, and his reply was, grow so many plums that the curculio can't sting half of them; or else fight them off.

DISCUSSION ON GRAPES.

After the remarks of Dr. Scott on this subject, given on a previous page, the following discussion was had on varieties of grapes:

IVES.—Mr. Mears said the Ives was one of the grapes for the million. It was almost the only kind that could be grown with certainty around Milford. Tastes will differ as to its quality. We cannot educate up the tastes of all the people speedily; and very many will buy and eat this grape and call it good, and that, too, before it is really ripe; for, as is well known, it turns black some time before it is ripe; and it also has the habit of bearing more fruit than the vines can ripen; thus its quality and repu-

tation are often injured. But, with fair care and culture, the fruit does ripen, and satisfies the tastes of very many people.

Mr. Galloway said it was true of this, as of many other varieties, that soil and locality make the fruit.

Mr. Finch, of Indian Hill, who received the premium plate of \$300 for the Ives as the best wine grape, spoke highly of the variety as grown on his soil, and said he regretted that he had not some of the wine to present to the meeting. He exhibited samples of the grapes.

CATAWBA.—Dr. Dunham, alluding to Dr. Scott's remarks respecting the superior ripeness of the Catawbas produced in Ross county, as compared with those of the Lake shore, admitted that the statement was true in reference to the early part of the season; but that the absence of autumn frosts and the prolonged season of ripening of the fruit along the Lake shore, and on the islands, abundantly compensated for any lack of summer heat, while the exemption from the diseases of the vine which were so generally disastrous in the southern parts of the State gave them decidedly the advantage. He had the must of his Catawbas tested several years ago, and one season it weighed $87\frac{1}{2}$ by the scale, and the other 100. This season the crop of grapes was so excessive in his region that much of the fruit could not ripen perfectly. Still a very large amount of good Catawbas had been shipped for table use, and an immense amount of good wine had been made in his county, as well as in the region of Sandusky, as had been stated by Col. Richmond.

Mr. Bateham said that a wine maker from Western New York told him he had bought large quantities of Catawba grapes along the Lake shore in Lorain county, the past month, for three cents per pound, the must of which averaged as high as 90; and he refused all lots which he thought were below this standard.

MARTHA.—Mr. Campbell, being called on, said he believed the Martha could be raised wherever the Concord would succeed. It had been pretty widely disseminated and proved quite popular. He had been informed that in the Cincinnati market those that had been brought there in good condition sold for eighteen cents per pound. It possessed rather more of the foxy flavor than he liked, but if left on the vine until it attained the yellow or amber color it gets when fully ripe, it loses most of this taste.

Mr. Mears also spoke well of the Martha.

Dr. Scott did not like the Martha nor the Ives for his locality. He spoke highly of

THE CONCORD, and Mr. Bailey, also of Ross county, stated that from four acres in full bearing and three acres three years old, in partial bearing, he had sold about thirty-five tons, at prices ranging from five to twelve cents per pound. Those shipped to Cleveland, Pittsburgh and

other points, netted him from six to seven cents per pound. He had eight hundred and eighty vines to the acre, which average about twenty pounds to the vine.

AFTERNOON SESSION.

DISCUSSION ON RASPBERRIES.

The question was asked whether there was now any difference of opinion among the members of the society in regard to the identity of the McCormick or Miami Black-Cap and the "Mammoth Cluster." All present seemed to consider that as settled, and the identity unquestioned.

"CHAPMAN."—Mr. Bailey, of Chillicothe, spoke of a still larger and better Black-Cap, known in his county as the Chapman Raspberry—being claimed as a chance seedling on the grounds of a man of that name residing near Cincinnati, and was carried from thence to Ross county by Felix R. McLean seven or eight years ago, and some plants of it were set on the farm now owned by Mr. Bailey soon afterward. He has been growing it for the past six years, and had supposed it would be found identical with the "Mammoth Cluster," until he procured that variety from Purdy and Hance, of South Bend, and found it identical with the Miami or McCormick, while the Chapman is a larger berry, of a brighter and blacker color, and differs in its habit of fruiting along the branches as well as in the clusters at the ends. It is much preferred over the McCormick and all other varieties in his section, where about thirty acres of it are now growing for the markets.

These remarks of Mr. Bailey excited considerable interest in the minds of the berry growers of Clermont county, several of whom expressed surprise that a new and superior raspberry should have originated near Cincinnati, nearly ten years ago, and not become known to any of them; still it was admitted that such a thing was possible, and their judgment would be deferred till the next fruit season.

Mr. Bateham and Mr. Campbell said they each received several plants of the Chapman from Mr. Bailey last spring, and should, no doubt, fruit it the coming season, when they would be able to report.

A rambling discussion followed on a large number of varieties of raspberries, but nothing of importance came of it.

ON BLACKBERRIES.

Mr. Pinkham wished to learn whether the Lawton or the Kitatinny was preferred for market.

Mr. Ohmer is a large grower of blackberries, and prefers the Kitatinny for shipping; though the Lawton is nearly or quite as profitable for home marketing. He has nearly five acres of Kitatinny.

Mr. Mears prefers the Kitatinny; considers the quality of the fruit a little better than the Lawton; it is a trifle earlier and the berries are ripe as soon as black, which is not the case with L. He found the K. sell in market for 50 cents a bushel more than the L. Wilson's Early Blackberry did not endure the winters on his grounds.

Col. Richmond found the same difficulty with Wilson's Early. Dr. Warder succeeded well with it.

ON STRAWBERRIES.

Frank Mears wanted to learn what varieties of strawberries to plant for market. He preferred to cultivate them in hills, and he was told that the Wilson produces better in rows or narrow beds.

Mr. Ohmer and Mr. Bailey said there was no other variety half so profitable for market, with them, as the Wilson, though they preferred the McAvoy and several others for family use.

Mr. Bateham remarked that the time for adjournment had so nearly arrived that it was not possible to go into much of a discussion on strawberries, but he would advise those living in that section who wished to learn all about the varieties of this fruit to go and spend a day or two on the grounds of Louis Ritz, of Plainville, when the fruit is ripening next June. Mr. R. has several hundred varieties on trial, and his grounds are a real school of strawberry culture. He has also produced some promising new seedling varieties, of which we shall probably hear something in due time.

RATES OF TRANSPORTATION AND COMMISSION.

W. E. Mears spoke of the high rates of the express transportation of fruits as one of the greatest obstacles to profitable fruit growing and to the furnishing of cheap fruits to the millions in our cities. He thought the fruit growers should combine so as to ship their fruits generally by car loads on freight trains, unless the express companies would carry on reasonable terms.

Mr. Richmond said this had been done very successfully by the fruit growers of Berlin, in Erie county, in shipping berries and grapes to Chicago; loading a car once a day, or every other day, and having an agent of their own at the city to look after the fruit and dispose of it on arrival.

Mr. Bateham had found the need of such an arrangement for disposing of his peaches and grapes; but he felt more like bringing complaint against the commission dealers, especially those of New York, than the express men. He did not complain of their rates of commission so much as of their dishonest tricks, and false statements of sales. He wished

there was some way by which those who suffer by these men could at least have the satisfaction of publishing the facts with the names of the dishonest parties. He was of the opinion that this would have to be done.

After a little miscellaneous business, the hour for adjournment having arrived, Mr. Campbell, of the Business committee, presented the following

PARTING RESOLUTIONS,

Which were unanimously adopted :

Resolved, That we, the members of the Ohio State Horticultural Society, hereby express our sincere acknowledgements for the very handsome and exceedingly hospitable and generous manner in which we have been welcomed and entertained by the citizens of Milford and vicinity, and we feel that the meeting has been one of great interest and profit to the Society. Especially are the thanks of this Society due to Wm. E. Mears, for his indefatigable exertions for our comfort, and the success of our plans, in rendering the meeting agreeable.

Resolved, That our thanks be tendered to the School Board of Milford for the free use of their excellent hall, and to the ladies who have decorated the same so tastefully; and that any fruits remaining on the tables are hereby given to the teachers and children of the school.

A resolution was also adopted tendering thanks to the Press for their reports of the proceedings, when the meeting adjourned *sine die*.

MEETING OF THE WESTERN NEW YORK HORTICULTURAL SOCIETY.

M. B. Bateham, having been appointed as delegate from the Ohio Society to the annual meeting of the Western N. Y. Society at Rochester, January 10th, 1872, presents the following brief report :

The attendance was not large, though fair; and as quite a number of the members are well known as nurserymen and fruit growers of large business capacity and experience, their discussions when in council are regarded with special interest by the fraternity throughout the country—though I cannot say that the results of this meeting came fully up to the expectations of those who attended it from abroad.

PROGRESS OF HORTICULTURE THERE.

Mr. P. Barry on accepting a re-election as President of the Society, said :

The Western New York Horticultural Society has now been organized seventeen years, and he felt proud of its success and the work it has done. Since its organization there has been great progress in horticultural pursuits. I dare not say how much money is brought to Western New York for seeds, and to fill nursery and seed orders. They can safely be counted by millions. Orders have recently been received from Japan, Australia, and very large orders from France. When this Society was organized, it was about the time of the failure of the wheat crop by the weevil.

One of the questions discussed at the first meeting was, whether the farmers of Western New York should not, in view of the failure of the wheat crop, engage more largely in the cultivation of fruit? The unanimous opinion of the Society was that they should; and it is a fact that the largest and best orchards in Western New York were planted since that time, and by men who attended that first meeting.

Mr. Barry believed that the next seventeen years would witness as great or greater progress in horticulture than the last. He spoke especially of the great advance to be made in the planting of ornamental trees and shrubs, and the floral embellishment of rural homes, as well as a better supply of good fruits for the inmates.

ORNAMENTAL TREES AND SHRUBS.

Mr. Ellwanger, from the standing committee on this subject, made a report, recommending the cut-leaved weeping birch, Kilmarnock willow, and the oak-leaved mountain ash, as among the commonly grown and desirable ornamental trees. Among the new trees recently introduced, are Young's weeping birch, a birch which is distinguished by its branches having a tendency to grow perpendicularly downwards, in line with the stem, the populus, grandidentata pendula, gleditschia bujoti pendula, betula alba fastigiata, maple, crisped leaved; maple, Leopold; maple dissectum; Elm, Kakii, larch, golden; magnolia, Senni; magnolia, norbertiana; thorn, Paul's new double scarlet; cherry, Crown Princess Victoria; cherry, Sieboldii.

Among the shrubs, new or recently introduced, are the hydrangea paniculata grandiflora, spiræa Thunbergii, viburnum plicatum, weigelia hortensis nivea, althea, variegated leaved.

NEW PEARS RECOMMENDED.

The committee on Foreign Fruits reported as follows :

Among the large number of foreign fruits, particularly pears, that have been tested here, during the past year, the following are worthy of commendation :

Duchesse de Bordeaux has been fruited in several localities, and promises to be a good late pear, but requires good soil and a warm season to bring it to perfection.

Vanderpool, Sept. 2.—Size medium to large; flesh melting, very juicy, sprightly, agreeable; a handsome fruit.

Lovaux, Sept. 2.—Large to medium size; juicy, sweet, melting, good. Seems to have a tendency to rot at the core, but this may be owing to its not having been picked in season.

Bonne du Puits-Ansault, Sept. 30.—A medium sized pear, like Oswego Beurre; full of juice, delicious, and a good bearer. Originated with Leroy, and propagated by him in 1865. One of the best of small pears.

Loriot de Barney, Sept. 6.—Size medium; resembles Sterling, but darker; melting and good.

Maurice Desportes, Sept. 27.—A good-sized, handsome pear; flesh fine-grained, melting and sweet, but not high flavored. A seedling of Leroy's.

Beurre d'Engheim, Oct. 5.—A handsome fruit, like a small Passe Colmar, flesh fine, juicy, melting and sweet.

Mme. Loriot de Barney, Oct. 14.—Size medium; melting, juicy, vinous; a little coarse; very good.

Calebasse d'Octobre, Oct. 14.—Large, long, pyriform, with a fine, ruddy tint on one side; melting, fine-grained, juicy, excellent.

Mme. Andre Leroy, Oct. 11.—Size large, flesh juicy, melting, a little astringent. No doubt a good pear. Thought highly of in France.

Aimi Ogereau, August 31.—Medium size, white flesh, melting, juicy, very good. Ripens with Bartlett.

Mme. Baptiste Desportes, October.—Size a little larger than medium. Flesh very fine, melting, juicy, with flavor of Edmonds or Passe Colmar; first rate.

Eugene Appert, September 11.—Medium size; golden russet color; flesh melting and buttery, with a Sheldon flavor. When well ripened, flavor of Gansel's Bergamot. Will rank as best.

Dr. Lindley, November 18.—Size medium; flesh crisp; sweet, melting, fine, perfumed. A first class pear.

DISCUSSION was had on a variety of topics; one of these was the question, "What fruits may be recommended for planting, without danger of over-stocking the markets?" Quite a variety of answers were given, none of them very definite or satisfactory, to out-siders, at least. Nearly all kinds of fruits being recommended in turn, and the general expression being to the effect that good fruits, well grown, and properly shipped, will always bring good prices.

ON DRYING FRUITS—ALDEN PROCESS.—The methods of drying fruits by fire heat was another topic of discussion, and a letter was read from Mr. Chas. Downing giving some account of the Alden Patent process of drying fruits and vegetables on a large scale by steam power and heated air. Of this, a good deal has been said during months past in the New York and other papers; and recently, parties have been operating at Chicago and elsewhere at the West, forming stock companies for erecting buildings and machinery for fruit drying by this process. All who examine their pamphlets and circulars, however, will observe that the figures

on which the profits of the proposed business are based, put the selling price of the fruit dried by the process, about three times as high as that of common dried fruit; and while it is perhaps true that owing to superior quality a limited quantity may be sold in large cities at the prices named, it will not be safe to invest money largely on the expectation that such prices will be realized at wholesale, for any considerable time.

Inquiry was made respecting the best form of apparatus for drying fruits in the family, and Mr. Bateham spoke of a portable and cheap kiln, or dryer, made of sheet iron, with shallow slides or drawers, one above another, which he had used for the past two years with much satisfaction, and saving thereby many bushels of ripe peaches which had become unfit to ship. It was made by H. Yost, of Dayton, Ohio, to whom inquiries should be directed.

ABOUT THE GRAPES.—Quite a discussion was had on the question, What new sorts of grapes will best replace the old ones. It was agreed in the outset that by "old ones" was meant *Catawba* and *Isabella*; and it was conceded that these were not very reliable as a general thing in Western New York. But it was found that no two persons present, were agreed as to what two or more varieties were the best to replace them. As usual at such meetings, all the known varieties were advocated with more or less array of facts and arguments, and the seekers after light were left as much in the dark as before.

A delegation being present from the Horticultural Society of Ontario, Canada, as well as from Ohio, the evening meeting was devoted mainly to remarks by the Rev. Mr. Burnet, of Ontario, on the history and progress of horticulture in that Dominion; and by M. B. Bateham on the condition and prospects of horticulture in Ohio, especially the workings of the State, county and township horticultural societies.

DOVER BAY GRAPE AND WINE COMPANY.

The Dover Bay vineyards, near Cleveland, have often been mentioned in the reports of this Society, and were visited by some of its members at the time of the excursion last summer. The following items are taken from the annual report of the company, published the past winter:

"It is generally known to Clevelanders that a number of our business men conceived the idea a few years ago of planting one of the largest vineyards in America—not for an investment that would pay enormous dividends to stockholders, but that they might have some place that they could take a few hours relaxation from their business, and with their families and friends enjoy visiting what they had an interest in. They own one of the finest farms and most complete and best cultivated vineyards along the lake shore.

"At the annual meeting of the Dover Grape and Wine Company, held recently, the following were elected officers of the company for 1872:

"Dr. D. H. Beckwith, President; R. R. Herrick, Vice President; A. K. Spencer, Secretary and Treasurer; Dr. R. B. Rush, Salem, Ohio; Geo. Warmington, C. H. Robison and H. Newberry, Board of Directors.

"The Superintendent remarks that there is now in full bearing, sixty acres of vineyard. The time occupied in trimming, on an average, was six days; two and one-half acres per man. The time occupied in cleaning up and drawing off brush, occupied one week with team. The past year he used rye straw instead of twine in tying the vines the first time, and saved over fifty dollars that has been expended heretofore for twine. We also find it preferable in other respects, as it does not cut or injure the wood, while it firmly secures it, and in pruning there is no loss of time in cutting it from the vines, as had to be done when twine was used.

"The grapes ripened uniformly. No disease appeared in our vineyard except the dry rot, which made its appearance on a few of the Catawba vines which grew on the low ground, the soil being black loam, which is acted upon much sooner by heat and moisture than clay soil.

"The sale of fruit for table grapes was upwards of forty tons, the price varying from four to eight cents per pound; the balance of the crop was pressed into wine, and is now stored in the cellar of the company. The must this year has been of a superior quality, probably the best produced for years.

"I am now trimming the vineyard as fast as possible, as at this season of the year nearly twice the amount of trimming can be accomplished as in the spring when the frost is coming out of the ground. I find also another benefit from early trimming—the pores close before the first flow of sap, thus preventing the escape of that which is so essential to the full development of the fruit.

"The expenses of carrying on the vineyard for the year 1871, amount to \$2,916.36. The sales of table grapes, \$4,046.16."

THE NEW GRAPES AT PLEASANT VALLEY, N. Y.

[The following is part of a letter from E. Van Keuren, Esq., of Hammondsport, President of the Pleasant Valley Grape Growers' Association, addressed to the Ohio Society at the time of our summer meeting, (Aug., 1871,) and giving a report of the condition and prospects of the grape crops in that region, which is omitted here.—SEC'Y:]

"Several kinds of grapes yet, in a measure, on trial—as the Iona, Walter, Croton and Eumelan—are revealing their characters as each year adds to the extension of their cultivation on different soils and with different training and culture.

"The *Iona* passed through the cold of winter very well, but started its buds and shoots quite late, as is its habit. Its foliage is very fine, crop of fruit heavy, with clusters open rather than compact, and vines growing slowly under a load of fruit that *Catawbas* would carry with ease at the same age.

"The *Croton* is proving itself a good grower, before heavily fruiting—perfectly healthy, and, in our region, may truly be represented as promising.

"The *Walter* has not made as uniformly good growth this year as the same vines promised they would last year. It appears as though over propagation had a share in producing this faulty behavior. Some vines, of good promise last year, are failing to make

as much growth this year, while others, again, in the same planting, are doing finely, bearing fruit, and, in all appearance, equal to what its friends could desire. It seems disposed to fruit early, and for number and compactness of clusters, leaves nothing to be desired.

"The *Eumelan* is behaving well in every respect, so far as I have seen or been advised. There are other grapes on trial with us, as the Martha, Hine, and several of the Rogers' numbers, but I have seen too little of them to justify the expression of an opinion of their adaptation to our locality or their worth to growers."

USE OF FERTILIZERS IN OHIO.

Having, in last year's report, promised to make further trial of bone super-phosphate as a fertilizer, I wish to say that the result of my experiments fully confirm what I have heretofore stated, namely: that this material is the best and cheapest manure that can be used by nurserymen, gardeners, etc., where stable manure cannot be had cheaply; and even farmers, on our light soils especially, where the supply of manure is scant, will find it economical to apply this super-phosphate to crops of corn, potatoes, garden vegetables, etc. Besides the Chicago article, mentioned in last year's report, I am this season using some which appears to be good, though seemingly not as strong as the other, manufactured in our own State by Boyer & Deaver, of Dayton, Ohio. This is a commendable enterprise, and it is to be hoped it will be sustained, and that similar establishments will soon be found in the neighborhood of all our cities which will convert that which is now a nuisance, into the elements of fertility and beauty. We again ask those who have experimented with the use of bone super-phosphates, to communicate the results, through the press or to the Secretary of the Society, for there is much need of more light on this subject.

COLORADO POTATO BUG.—As predicted last year, this troublesome visitor from the far west has fairly spread itself over our State. At the time of this writing (20th June, '72,) it is reported as seen, more or less, in almost every county, and in some of the western sections, where it was not severely fought off last year, it is quite numerous and destructive to the potatoes. But in most parts of the State the bugs have not, as yet, appeared in so great numbers as was anticipated, and where well opposed with Paris Green, etc., are not likely to cause much injury to the crop this year, and some farmers express the belief that Ohio will not suffer as much from this pest as some of the more western States. It is hoped that the carnivorous insects which prey upon the potato bugs have increased sufficiently to materially check their operations. It is not safe, however, for potato growers to rely upon this theory, but persistently poison or kill all the bugs that make their appearance.

THE CURRANT WORM is also rapidly extending its ravages over the State, and, in some places, has almost ruined the prospects for growing this desirable summer fruit. It can be destroyed by dusting the leaves a few times, after the worms begin to appear, with Paris Green, diluted with flour—the same as for the potato bug—or with hellebore powder. As both articles are poisonous—the Paris Green especially—the fruit on which they are sprinkled should not be eaten. The same remedies are effectual for the rose-slug or worm, or it may be killed by sprinkling the leaves with a decoction of quassia chips, about a half pound of the chips to a gallon of water, applied with a small watering can or sprinkler. Carbolic soap-suds, as mentioned in last year's report, is also an effectual and cheap remedy for these pests, but care is necessary to avoid using the liquid so strong as to kill the foliage along with the insects.

M. B. B.

TREASURER'S REPORT, 1871-72.

Received—

Amount remaining in the hands of Treasurer, March 1, 1871.....	\$462 50
Appropriation from State	490 00
Fees from members from March 1, 1871, to March 1, 1872	116 00
	\$1,068 00

Paid—

Printers' bills during the year.....	\$30 00
Postage account on reports, circulars and letters.....	36 00
Express charges.....	6 05
President's traveling expenses.....	4 00
Vice President's ".....	35 00
Secretary's ".....	98 00
Treasurer's ".....	43 00
D. C. Richmond's ".....	13 00
Leo Weltz's ".....	35 00
W. J. Townsend's ".....	4 50
W. E. Mear's ".....	23 40
Vice President's expenses as delegate to Richmond.....	50 00
Secretary's salary for year	200 00
	577 95

Balance on hand March 1, 1872..... \$490 05

J. W. DUNHAM, *Treasurer,*
Collamer, Ohio.

Members of the Society who have not paid their annual fee (\$1.00) for 1872, are requested to remit the same by mail to the Secretary or Treasurer, unless they expect to be present at the meeting in Chillicothe or Mansfield, and pay then. Persons wishing to join the Society and receive the annual reports of this and the Indiana Society, can do so on the payment of the annual fee.

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OF THE

OHIO STATE HORTICULTURAL SOCIETY, 1872.

President—Dr. J. A. WARDER, Cleves.
Vice President—N. OHMER, Dayton.
Secretary—M. B. BATEHAM, Painesville.
Treasurer—Dr. J. W. DUNHAM, Collamer.

<p>D. C. RICHMOND, Sandusky, L. WELTZ, Wilmington, GEO. W. CAMPBELL, Delaware, WM. E. MEARS, Milford,</p>	}	<p><i>Members of the Committee Ad Interim, with the above officers.</i></p>
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